federal register

MONDAY, JUNE 9, 1975

WASHINGTON, D.C.

Volume 40 ■ Number 111

PART III

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

■

AIRWORTHINESS REVIEW PROGRAM

Flight Proposal

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[14 CFR PARTS 1, 21, 23, 25, 27, 29, 91 & 121]

[Docket No. 14684; Notice No. 75–25]

AIRWORTHINESS REVIEW PROGRAM

Notice No. 6: Flight Proposals

The Federal Aviation Administration is considering amending Parts 1, 21, 23, 25, 27, 29, 91, and 121 of the Federal Aviation Regulations to update and improve (1) the airworthiness standards applicable to aircraft performance, flight characteristics, flight manuals and operating limitations and information; (2) the operating regulations containing related airworthiness standards; and (3) rules governing holders of type certificates.

This is the sixth of a series of Notices of Proposed Rule Making issued, or to be issued, as a part of the First Biennial Airworthiness Review Program. Notice No. 74–33 (39 FR 36595; October 11, 1974) was the first. Amendments 21–43, 23–16, and 25–37, issued on December 31, 1974 (40 FR 2576; January 14, 1975) pursuant to that notice, incorporated certain form number and clarifying revisions into the Federal Aviation Regulations.

In addition to Notice No. 74–33, the following Airworthiness Review Program notices of proposed rule making have also been issued:

Airworthiness Review Program Notice No.	Notice No.	FR citation
2	75–10	(40 FR 10802; Mar. 7, 1975.)
3	75–19	(40 FR 21866; May 19, 1975.)
4	75–20	(40 FR 22110; May 20, 1975.)
5	75–23	(40 FR 23047; May 27, 1975.)

Interested persons, including the general public, manufacturers and users of aircraft and their components, both foreign and domestic, and foreign airworthiness authorities, are invited to participate in this proposed rulemaking by submitting such written data, views, or arguments as they may desire. Comments relating to any significant environmental or economic impact that might result because of the adoption of the proposals contained herein may also be submitted. Comments should identify this regulatory docket or notice number (Docket No. 14684; Notice No. 75–25) and be submitted in duplicate to: Federal Aviation Administration, Office of Chief Counsel, Attention: Rules Docket, AGC–24, 800 Independence Avenue, SW, Washington, D.C. 20591. All communications received on or before September 8, 1975, will be considered by the Administrator before taking action on the proposed rules. However, interested persons are urged to submit their comments as early as possible to facilitate rapid resolution of any issues raised. The proposals contained in this notice may be changed in the light of comments received. All comments submitted will be available in the rules docket for examination by interested persons.

On February 12, 1974, the FAA issued an invitation to all interested persons to submit proposals for consideration during the First Biennial Airworthiness Regulations Review (see Notice 74–5, 39 FR 5785, February 15, 1974). In that notice, the FAA announced that it would make available for comment by interested persons a compilation of proposals that were to be given further consideration as possible agenda items for the First Biennial Airworthiness Review Conference. On May 22, 1974, the FAA issued an announcement of the availability of the Compilation of Proposals containing over 1000 submissions by the FAA and interested persons, and invited all interested persons to submit comments on the proposals it contained (see Notice 74–5A, 39 FR 18662, May 29, 1974).

In response to that invitation for comments, the FAA received over 4900 individual comments contained in 74 submissions. Based on those comments and on the Compilation of Proposals, the FAA prepared a number of working documents for the Airworthiness Review Conference held in Washington, D.C., on December 2–11, 1974. The FAA distributed those documents to all persons who had participated in the Airworthiness Review Program and to all other interested persons who requested them (see Notice 74–5B, 39 FR 36594, October 11, 1974).

For reasons given in Notice 74–5B, not all of the proposals contained in the Compilation were included in the Agenda for the conference. However, the proposals not included in the agenda were listed in a conference workbook titled "Proposals Not in Agenda." In general, Notice 75–10 deals with the proposals identified as "Items for Notice" in that workbook.

On November 25, 1974, the FAA issued a Notice of Conference that set forth the schedule for the conference and invited all interested persons to attend the conference (see Notice 74–5C, 39 FR 41319, November 26, 1974).

The Airworthiness Review Conference was attended by over 586 individuals representing 22 foreign airworthiness authorities as well as aircraft manufacturers and users. Except for the opening and closing plenary sessions of the conference, one or more committees discussed agenda items during conference working hours. Summaries were given by the FAA Committee Chairmen at the close of discussions on each agenda item. Persons present were given an opportunity to correct those oral summaries. Transcripts of those summaries (with editorial revisions) were combined with an attendee list for the conference as well as with transcripts of certain plenary session speeches and were distributed in accordance with a notice of availability issued February 4, 1975 (see Notice 74–5D; 40 FR 5810; February 7, 1975).

In general this notice deals with the proposals that were contained in the Committee workbook titled "Committee II—Flight." That workbook contained the proposals discussed by the Flight Committee at the Airworthiness Review Conference as well as written comments that were received for those proposals in response to Notice 74–5A. Another conference working document used was the Agenda for the Airworthiness Review Conference. That document, in addition to providing general information relating to the conference, included details on how the proposals were grouped into agenda items, and the scheduling of those items for discussion. Both the workbooks and the agenda were updated and corrected by a supplemental working document distributed prior to and at the conference to participating individuals as well as to other interested persons. These workbooks along with the committee discussions and written information submitted by conference attendees has provided the basis upon which the FAA has developed this notice.

A number of proposals contained in this notice were not included in the Committee II workbook. They are directly related to the proposals in the workbook and are included for the sake of clarity, consistency, and comprehensiveness. In addition, there are several proposals dealt with in this notice which appeared as "Items for Notice" in the "Proposals Not in Agenda" workbook but were withheld from consideration pending the completion of the Airworthiness Review Conference (see Appendix I to Notice 75–10 for a list of those proposals).

A number of proposals contained in the Committee II workbook are not included in this notice. These proposals (listed in Appendices I, II, and III) fall into three categories as follows:

Appendix I—those proposals which are being deferred to a later notice or to the next Airworthiness or Operations Review.

Appendix II—those proposals which were withdrawn by their proponent.

Appendix III—those proposals which were removed from consideration during this Airworthiness Review.

The FAA believes that, in general, the proposals in Appendix I Group 1 have sufficient merit to warrant further consideration and will be dealt with in the next Airworthiness or Operations Review, unless withdrawn by their proponent. But, because of the complexity of the proposal, the need for additional data, or the operational character of the proposal, further consideration within this Airworthiness Review is not feasible. The proposals in Appendix I Group 2 will be dealt with in a later notice as a part of this Airworthiness Review Program. The proposals in Appendix III have been removed from consideration for the reasons stated in that appendix.

The FAA believes that the airworthiness standards should, to the extent practical, be consistent throughout the airplane and rotorcraft certification parts (Parts 23, 25, 27, and 29). Therefore, the FAA has attempted within the time frame of this Airworthiness Review Program, to make consistent and parallel proposals, where appropriate, for each of these certification parts.

To avoid unnecessary repetition, in a number of instances the proposals developed for purposes of consistency are not set forth in their entirety if those proposals are substantively identical to another proposal in this notice. A short-form proposal referring to a proposal that is expressly set forth in this notice is used. Where a short-form proposal is used, however, there may be a need, if the proposal is to be adopted as a final rule, to change paragraph designations, cross references, or aircraft terminology (e.g. "airplane" to "rotorcraft", or vice versa) from that used in the referenced express proposal.

The FAA recognizes that there may exist additional instances in which a proposed rule change prescribed in this notice as expressly applying only to certain parts of the Federal Aviation Regulations should more appropriately apply to additional parts as well. Therefore, with respect to each proposal in this notice relating to Parts 23, 25, 27, or 29 of the Federal Aviation Regulations for which similar proposals do not exist for all of those parts, comments are solicited from all interested persons with respect to the applicability of that proposal (and its stated explanation) to those parts for which the proposal has not been expressly presented. Such comments received in response to this notice will either be dealt with as a part of the 1974–1975 Airworthiness Review Program or be considered as a part of the next Biennial Airworthiness Review.

For convenience, each proposal in this notice is numbered separately. The FAA requests that interested persons, when submitting comments, refer to proposals by these numbers, or by the section to which they relate. Each proposal contains, or references a proposal that contains, a reference to the Airworthiness Review Program proposal number, section, and agenda item to which that proposal relates. Comment on this notice should not refer to the Airworthiness Review Program proposal numbers or section numbers without also referring to the corresponding proposal numbers as set forth in this notice. Each proposal in this notice is provided with an explanation. In addition, to avoid confusion several of the proposals in this notice reference proposals in Notice 75–10 that deal with the same regulatory provisions. Several explanations deal with comments received in response to Notice 74–5A; however, all comments submitted in response to Notice 74–5A or submitted for the Airworthiness Review Conference, dealing with proposals contained in this notice, should be resubmitted if it is desired that they be considered as a part of this rulemaking action.

This amendment is proposed under the authority of sections 313(a), 601, 603, 604 and 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, 1424, and 1425) and of section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

In consideration of the foregoing, it is proposed to amend Parts 1, 21, 23, 25, 27, 29, 91, and 121 of the Federal Aviation Regulations as follows:

PART 1—DEFINITIONS AND ABBREVIATIONS

§ 1.1 [Amended]

6–1. By amending § 1.1 by deleting the term "Accelerate-stop distance" and its definition.

Explanation. See the proposal for § 25.107(a).

Ref. Proposal Nos. 10, 158, 159, 1025, 1026; §§ 1.1, 25.107, 25.109; Agenda Item F–33.

§ 1.2 [Amended]

6–2. By amending § 1.2 by revising the definition of V_1 to read as follows:

V_1 means takeoff decision speed (formerly denoted as critical engine failure speed).

Explanation. See the proposal for § 25.107(a).

Ref. Proposal Nos. 15, 158, 159, 1025, 1026, 1028; §§ 1.2, 25.107, 25.109, 25.111; Agenda Item F–33.

PART 21—CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS

6–3. By adding a new § 21.5 to read as follows:

§ 21.5 Airplane or Rotorcraft Flight Manual.

(a) With each airplane or rotorcraft that was not type certificated with an airplane or Rotorcraft Flight Manual and that has had no flight time prior to [one year after the effective date of this amendment], the holder of a Type Certificate (including a Supplemental Type Certificate) or the licensee of a Type Certificate shall make available to the owner at the time of delivery of the aircraft a current approved Airplane or Rotorcraft Flight Manual.

(b) The Airplane or Rotorcraft Flight Manual required by paragraph (a) of this section must contain the following information:

(1) The operating limitations and information required to be furnished in an Airplane or Rotorcraft Flight Manual or in manual material, markings, and placards, by the applicable regulations under which the airplane or rotorcraft was type certificated.

(2) The maximum anticipated air temperature for which engine cooling was demonstrated must be stated in the performance information section of the Flight Manual, if the applicable regulations under which the airplane was type certificated do not require ambient temperature or engine cooling operating limitations in the Flight Manual.

Explanation. Present regulations require an Airplane or Rotorcraft Flight Manual for type certification of transport category airplanes, transport category rotorcraft, and airplanes certificated under Part 23 that have a maximum weight greater than 6,000 pounds. However, for airplanes of lesser weight and for helicopters certificated under Part 27, the required operating limitations and information may be furnished in any combination of manuals, markings, and placards.

The FAA believes that providing necessary safety information in "any combination of manuals, markings, and placards", may be confusing to pilots, especially since most pilots take their initial flight training in small single engine airplanes or helicopters. An approved Airplane or Rotorcraft Flight Manual would provide the aircraft operator with essential information in a consolidated, organized form suitable for study and reference.

The proposal for § 21.5(a) would require the holder or licensee of a Type Certificate or Supplemental Type Certificate to make available an approved Airplane or Rotorcraft Flight Manual with each "new" airplane that has had no flight time prior to a date one year after the effective date of the proposed amendment. The proposal would not require Flight Manuals for aircraft which are no longer being manufactured. With Flight Manuals available for all newly manufactured airplanes and rotorcraft, the FAA believes the objective of providing accurate information in the most useful form to the largest number of operators can be reasonably obtained.

The proposals for §§ 23.1581 and 27.1581 would require Flight Manuals for all small airplanes and rotorcraft type certificated in the future.

The proposal for § 21.5(b) lists the information that must be furnished in the Airplane or Rotorcraft Flight Manual, beginning with information prescribed in the applicable regulations under which the aircraft was type certificated. For example, for an airplane of 6,000 pounds or less maximum weight type certificated under Part 23, § 23.1581(a) requires that the applicable information in §§ 23.1583 through 23.1589 must be furnished in an Airplane Flight Manual or in any combination of manuals, markings, or placards. Under the proposal for § 21.5(b)(1), the required information would be furnished in a Flight Manual. However, this proposal would not delete any placards required under the type certificate.

In the past, Parts 23 and 27 have not required the Manual or other operating information to include the maximum air temperature for which compliance was shown with the engine cooling requirements. The proposal for § 21.5(b)(2) would correct this omission. Proposals for §§ 23.1521(e), 23.1583(b), 27.1521(f), and 27.1583(b) would correct the omission for aircraft type certificated under these parts in the future.

To ensure that the Airplane or Rotorcraft Flight Manual furnished with the aircraft by the holder of the type certificate under proposed § 21.5(a) is kept available in the aircraft for use during operations, a proposal to this effect is made for § 91.31(b).

Ref. Proposal Nos. 582, 1008; §§ 21.183, 91.31; Agenda Items D–20, D–22.

PART 23—AIRWORTHINESS STANDARDS: NORMAL, UTILITY, AND ACROBATIC CATEGORY AIRPLANES

§ 23.25 [Amended]

6–4. By adding at the end of § 23.25(b)(2) the word "and" and by deleting § 23.25(b)(3) and by redesignated § 23.25(b)(4) as § 23.25(b)(3).

Explanation. Under the proposal for § 23.29, the weight of the oil and other operating fluids would be included in the weight empty of the airplane. If that proposal is adopted, the weight of the oil should not be included again in the minimum weight established under § 23.25(b). It is therefore proposed that § 23.25(b)(3) be deleted.

Ref. Proposal Nos. 61, 152; §§ 23.29(a)(3), 25.29(a)(3); Agenda Items A–1, E–30.

6–5. By amending § 23.29 by deleting paragraphs (a)(4) and (a)(5) and by revising paragraph (a)(3) to read as follows:

§ 23.29 Empty weight and corresponding center of gravity.

(a) * * *

(3) Full operating fluids, including—

(i) Oil;

(ii) Hydraulic fluid; and

(iii) Other fluids required for normal operation of airplane systems, except water intended for water injection in the engines.

* * * * *

Explanation. This proposal would simplify weight and balance procedures by permitting a "weight empty" to be established with tanks full of the operating fluids that are normally carried on all flights. This proposal is also made for §§ 25.29, 27.29 and 29.29.

Ref. Proposal No. 61; § 23.29(a)(3); Agenda Item A–1.

6–6. By revising § 23.45 to read as follows:

§ 23.45 General.

(a) Unless otherwise prescribed, the performance requirements of this subpart must be met for still air and a standard atmosphere.

(b) The performance must correspond to the propulsive thrust available under the particular ambient atmospheric conditions, the particular flight condition, and the relative humidity specified in paragraphs (d) or (e) of this section, as appropriate.

(c) The available propulsive thrust must correspond to engine power or thrust, not exceeding the approved power or thrust, less—

(1) Installation losses; and

(2) The power or equivalent thrust absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition.

(d) For reciprocating engine powered airplanes, the performance, as affected by engine power, must be based on a relative humidity of 80 percent in a standard atmosphere.

(e) For turbine engine powered airplanes, the performance, as affected by engine power or thrust, must be based on a relative humidity of—

(1) 80 percent, at and below standard temperature; and

(2) 34 percent, at and above standard temperature plus 50 degrees F.

Between these two temperatures, the relative humidity must vary linearly.

Explanation. Performance requirements for this subpart must be shown for still air with a standard atmosphere, as set forth in the present § 23.45. This proposal would require consideration of power losses due to the installation and power absorbed by the accessories and services, as well as, consideration of specified humidity conditions. These considerations should increase the accuracy of the airplane performance data.

Ref. Proposal No. 588; § 23.45; Agenda Item B–3.

6–7. By revising § 23.49 (a)(1) and (c)(1), and by adding a new § 23.49(e) to read as follows:

§ 23.49 Stalling speed.

(a) V_{S_0} is the stalling speed, if obtainable, or the minimum steady speed, in knots (CAS), at which the airplane is controllable, with the—

(1) Applicable power or thrust condition set forth in paragraph (e) of this section;

* * * * *

(c) V_{S_1} is the calibrated stalling speed, if obtainable, or the minimum steady speed, in knots, at which the airplane is controllable with the—

(1) Applicable power or thrust condition set forth in paragraph (e) of this section;

* * * * *

(e) The following power or thrust conditions must be used to meet the requirements of this section:

(1) For reciprocating engine powered airplanes, engines idling, throttles closed or at not more than the power necessary for zero thrust at a speed not more than 110 percent of the stalling speed.

(2) For turbine engine powered airplanes, the propulsive thrust must not be greater than zero at the stalling speed, or, if the resultant thrust has no appreciable effect on the stalling speed, with engines idling and throttles closed.

Explanation. The present requirement in § 23.49 (a)(1) and (c)(1) allows stalling speed or minimum steady speed to be established with engines idling, throttles closed. Flight test experience has shown that some turbopropeller powered airplanes may demonstrate a relatively high positive propeller thrust at the stall speed. This thrust condition may yield an unconservative stalling speed. This proposal would establish a new requirement for all turbine engine powered airplanes to be certificated under Part 23 and would transfer the present requirements in paragraph (a)(1) and (c)(1) to a new paragraph (e)(1). The new requirement in paragraph (e)(2) would limit turbine engine powered airplanes to not greater than a zero propulsive thrust condition at the demonstrated stalling speed unless it is shown that a greater thrust (corresponding with engines idling, throttles closed) has no appreciable effect on the stalling speed.

Ref. Proposal No. 589; § 23.49(a)(1); Agenda Item B–4.

6–8. By revising § 23.51 to read as follows:

§ 23.51 Takeoff.

(a) For each airplane (except a skiplane for which landplane takeoff data has been determined under this paragraph and furnished in the Airplane Flight Manual) the distance required to takeoff and climb over a 50-foot obstacle must be determined with—

(1) The engines operating within approved operating limitations; and

(2) The cowl flaps in the normal takeoff position.

(b) For multiengine airplanes, the lift-off speed, V_{LOF}, may not be less than V_{MC} determined in accordance with § 23.149.

(c) Upon reaching a height of 50 feet above the takeoff surface level, the airplane must have reached a speed of not less than the following:

(1) For multiengine airplanes, the higher of—

(i) 1.1 V_{MC}; or

(ii) 1.3 V_{S_1}, or any lesser speed, not less than V_X plus 4 knots, that is shown to be safe under all conditions, including turbulence and complete engine failure.

(2) For single engine airplanes—

(i) 1.3 V_{S_1}; or

(ii) Any lesser speed, not less than V_X plus 4 knots, that is shown to be safe under all conditions, including turbulence and complete engine failure.

(d) The starting point for measuring seaplane and amphibian takeoff distance may be the point at which a speed of not more than three knots is reached.

(e) Takeoffs made to determine the data required by this section may not require exceptional piloting skill or exceptionally favorable conditions.

Explanation. This is one of a series of proposals that would change certain performance and Airplane Flight Manual distinctions which have been established in Part 23 for airplanes that have a maximum weight of 6,000 pounds or less. This series includes proposals for §§ 23.51, 23.65, 23.67, 23.75, 23.77, 23.161, 23.1047, 23.1541, 23.1559, 23.1581, 23.1585, and 23.1587. The proposals would require that approved operating limitations, operating procedures, and performance information be included in an Airplane Flight Manual in all airplanes that are type certificated under Part 23 in the future.

The proposals would make the Flight Manual a part of the airplane's type certification for airplanes that have a maximum weight of less than 6,000 pounds. This is the same requirement that is applicable to airplanes certificated under present Part 23 that have a maximum weight greater than 6,000 pounds. Also, see the proposal for § 21.5,

which would require the type certificate holder or licensee of the type certificate to make approved Flight Manuals available for all airplanes and rotorcraft newly manufactured after a prescribed date. The FAA believes the Flight Manual would provide the airplane and rotorcraft operator with essential information in a consolidated and organized form, suitable for study and reference.

The proposal for § 23.51 would require that takeoff distance data be determined for all airplanes. For multiengine airplanes the proposal would add requirements that the lift off speed be not less than the minimum control speed, V_{MC} with one engine inoperative, and the speed at the 50 foot height point not less than 1.1 V_{MC}. The proposal for multiengine airplanes is made to ensure that the takeoff performance data will be based on speeds which are adequate for maintaining control of the airplane in the event of failure of the critical engine during takeoff.

The proposal for § 23.75 would require the determination of landing distance data for all airplanes.

The proposals for §§ 23.65(a) and 23.77 (a) would apply the same takeoff and balked landing climb requirements to all airplanes, in view of the proposals for §§ 23.51 and 23.75 to require takeoff and landing distance data for all airplanes.

Under the proposals for §§ 23.1581(a) and 23.1587, an Airplane Flight Manual, including takeoff and landing performance data would be required for all new type certificates for which the proposed amendments would be made applicable under § 21.17. The Airplane Flight Manual would also contain one-engine-inoperative performance data for all multiengine airplanes. (See the proposal for § 23.67).

The proposals for §§ 23.161 (trim), 23.1047(b)(1) (cooling), 23.1541 (placards), 23.1559 (placards), and 23.1585 (operating procedures) are being made for consistency with the other proposals that would make Part 23 requirements the same for airplanes above and below 6,000 pounds maximum weight.

Ref. Proposal Nos. 591, 67; §§ 23.51, 23.51(c); Agenda Items B–5, B–6.

6–9. By revising § 23.65 to read as follows:

§ 23.65 Climb: all engines operating.

(a) Each airplane must have a steady rate of climb at sea level of at least 300 feet per minute and a steady angle of climb of at least 1:12 for landplanes or 1:15 for seaplanes and amphibians with—

(1) Not more than maximum continuous power on each engine;

(2) The landing gear retracted;

(3) The wing flaps in the takeoff position; and

(4) The cowl flaps in the position used in the cooling tests required by §§ 23.1041 through 23.1047.

(b) Each airplane with engines for which the takeoff and maximum continuous power ratings are identical and that has fixed-pitch, two-position, or similar propellers, may use a lower propeller pitch setting than that allowed by § 23.33 to obtain rated engine r.p.m. at V_X, if—

(1) The airplane shows marginal performance (such as when it can meet the rate of climb requirements of paragraph (a) of this section but has difficulty in meeting the angle of climb requirements of paragraph (a) of this section or of § 23.77); and

(2) Acceptable engine cooling is shown at the lower speed associated with the best angle of climb.

(c) Each turbine engine powered airplane must be able to maintain a steady gradient of at least 4 percent at a pressure altitude of 5,000 feet and a temperature of 81° F (standard temperature plus 40° F).

Explanation. See the proposal for § 23.51 concerning airplanes of 6,000 pounds or less maximum weight.

In addition this proposal would add an additional performance requirement for Part 23 turbine engine powered airplanes. Since temperature affects the performance of a turbine engine to a greater degree than if affects a reciprocating engine, this proposal would require consideration of the power reduction due to higher than normal temperature. This temperature would be standard temperature plus 40° F at 5,000 feet pressure altitude.

The FAA will give further study to the question of converting the Part 23 climb requirements from a rate of climb to a gradient of climb basis.

Ref. Proposal Nos. 593, 68, 594; §§ 23.65, 23.65(a)(3); Agenda Items B–5, B–7.

6–10. By amending § 23.67 as follows:

1. By inserting the words "reciprocating engine powered" after the first word "Each" in the lead-in sentence of § 23.67(a).

2. By inserting the words "reciprocating engine powered" after the first word "For" in the lead-in sentence of § 23.67 (b).

3. By adding new paragraphs § 23.67 (c) and (d) to read as follows:

§ 23.67 Climb: one engine inoperative.

* * * * *

(c) For turbine-powered multiengine airplanes the following apply:

(1) The steady gradient of climb must be determined at each weight, altitude, and ambient temperature within the operational limits established by the applicant, with the—

(i) Critical engine inoperative, and its propeller in the minimum drag position;

(ii) Remaining engines at not more than maximum continuous power or thrust;

(iii) Landing gear retracted;

(iv) Wing flaps in the most favorable position; and

(v) The means for controlling the engine-cooling air supply in the position used in the engine cooling tests required by §§ 23.1041 through 23.1047.

(2) Each airplane must be able to maintain the following climb gradients with the airplane in the configuration prescribed in paragraph (c)(1) of this section:

(i) 1.2 percent (or, if greater, a gradient equivalent to a rate of climb of 0.027 V_{Se}^2) at a pressure altitude of 5,000 feet and standard temperature (41° F).

(ii) 0.6 percent (or, if greater, a gradient equivalent to a rate of climb of 0.014 V_{Se}^2) at a pressure altitude of 5,000 feet and 81° F (standard temperature plus 40° F).

(3) The minimum climb gradient specified in paragraphs (c)(2) (i) and (ii) of this section must vary linearly between 41° F and 81° F and must change at the same rate up to the maximum operating temperature approved for the airplane.

(4) In paragraphs (c)(2) (i) and (ii) of this section, rate of climb is expressed in feet per minute and V_{Se} is expressed in knots.

(d) For all multiengine airplanes, the speed for best rate of climb with one engine inoperative must be determined.

Explanation. Under present §§ 23.67 (a) and (b)(1) multiengine airplanes of more than 6,000 pounds maximum weight or with a stalling speed of more than 61 knots are required to have a prescribed positive rate of climb at 5,000 feet altitude with one engine inoperative. Multiengine airplanes of lesser weight and stalling speed are not required to have a positive rate of climb with one engine inoperative, but their performance must be determined under § 23.67 (b)(2) and made available to the airplane operator under § 23.1587(c).

Proposal No. 596 for § 23.67, discussed in Committee II (Flight) under Agenda Items B–5 and B–8 would make the requirement for a positive one-engine-inoperative climb at 5,000 feet (specified in § 23.67(a)) applicable to all multiengine airplanes certificated under Part 23 regardless of weight, and a related Proposal No. 590 would delete the stalling speed limit for multiengine airplanes. Comments were made to the Committee that it would not be feasible to build economical multiengine airplanes of 6,000 pounds or less maximum weight if they had to meet the one-engine-inoperative climb requirement at 5,000 feet. The commentors also pointed out that single engine airplanes may be certificated under Part 23 if their stalling speed is 61 knots or less, and that § 23.49 (b) also applies this stalling speed limit to multiengine airplanes that cannot meet the one-engine-inoperative climb requirement of § 23.67(b). The FAA believes that these comments opposing Proposal No. 596 warrant further study, insofar as reciprocating engine powered airplanes are concerned.

Turbine engines generally have a higher power to weight ratio than reciprocating engines, and are therefore capable of providing higher performance or payload. However, if a reciprocating engine were replaced by a turbine engine having the same power at sea level, the power of the turbine engine at 5,000 feet with temperatures above standard could be considerably less than that of the reciprocating engine. Because of these dif-

ferences between reciprocating and turbine engines, the FAA believes that all turbine engine powered airplanes type certificated under Part 23 in the future (in accordance with the applicability provisions of § 21.17) should meet a positive climb requirement at 5,000 feet at a temperature above standard, regardless of the maximum weight.

The proposal herein for § 23.67 would therefore make the present requirements of § 23.67(a) and (b) applicable only to reciprocating engine powered airplanes, and add a new § 23.67(c) for turbine engine powered airplanes, prescribing one-engine-inoperative climb requirements at 5,000 feet at standard temperature and lesser climb requirements at standard temperature plus 40° F. The proposal for § 23.67(c)(1) would also require the determination of climb data throughout the ranges of weight, altitude, and temperature within the operational limits established by the applicant.

The FAA will give further study to the question of converting the climb requirements from a rate of climb to a gradient of climb basis.

Section 23.1047(d)(5) permits engine cooling requirements to be met at a speed greater than the best rate of climb speed, if the climb requirements of § 23.67 (a) or (b)(1) are met at this greater speed and a cylinder head temperature indicator is installed. The proposal for § 23.67(d) would therefore require that the best rate of climb speed also be determined, and the proposal for § 23.1587 would require that both speeds be shown in the Airplane Flight Manual so the pilot could obtain maximum performance from the airplane under various operating conditions.

Ref. Proposal Nos. 595, 596, 597, 717, 69; §§ 23.67(a), 23.67, 23.1587; Agenda Items B–5, B–8.

6–11. By revising § 23.75 to read as follows:

§ 23.75 Landing.

For airplanes (except skiplanes for which landplane landing data have been determined under this section and furnished in the Airplane Flight Manual), the horizontal distance necessary to land and come to a complete stop (or to a speed of approximately 3 knots for water landings of seaplanes and amphibians) from a point 50 feet above the landing surface must be determined as follows:

(a) A steady gliding approach with a calibrated airspeed of at least 1.3 V_{S_1} must be maintained down to the 50 foot height.

(b) The landing may not require exceptional piloting skill or exceptionally favorable conditions.

(c) The landing must be made without excessive vertical acceleration or tendency to bounce, nose over, ground loop, porpoise, or water loop.

(d) It must be shown that a safe transition to the balked landing conditions of § 23.77 can be made from the conditions that exist at the 50 foot height.

(e) The pressures on the wheel braking system may not exceed those specified by the brake manufacturer.

(f) Means other than wheel brakes may be used if that means—

(1) Is safe and reliable;

(2) Is used so that consistent results can be expected in service; and

(3) Is such that exceptional skill is not required to control the airplane.

Explanation. See the proposal for § 23.51 concerning airplanes of 6,000 pounds or less maximum weight.

In addition, this proposal would add a requirement permitting means other than brakes (in addition to brakes) to be used in determining the landing distance, if these means are shown to be safe and reliable and are used so that consistent results can be expected in service.

With respect to brakes, the proposal would limit the brake operating pressures used in the landing performance tests to the maximum pressures specified by the brake manufacturer.

Ref. Proposal Nos. 598, 599; §§ 23.75(a)(b), 23.75(a)(5); Agenda Items B–5, B–9.

6–12. By revising § 23.77 to read as follows:

§ 23.77 Balked landing

(a) For balked landings, each airplane must be able to maintain a steady angle of climb at sea level of at least 1:30 with—

(1) Takeoff power on each engine;

(2) The landing gear extended; and

(3) The wing flaps in the landing position, except that if the flaps may safely be retracted in two seconds or less without loss of altitude and without sudden changes of angle of attack or exceptional piloting skill, they may be retracted.

(b) Each turbine engine powered airplane must be able to maintain a steady rate of climb of at least zero at a pressure altitude of 5000 feet at 81° F (standard temperature plus 40° F), with the airplane in the configuration prescribed in paragraph (a) of this section.

Explanation. See the proposal for § 23.51 concerning airplanes of 6,000 pounds or less maximum weight.

The proposal would also add an additional requirement to cover the effects of temperature on turbine engine powered airplanes. See the proposal for § 23.65.

The FAA will give further study to the question of converting Part 23 climb requirements from a rate of climb to a gradient of climb basis.

Ref. Proposal Nos. 601, 600, 70; §§ 23.77, 23.77(b); Agenda Items B–5, B–10.

6–13. By revising § 23.149 to read as follows:

§ 23.149 Minimum control speed.

(a) V_{MC} is the calibrated airspeed, at which, when the critical engine is suddenly made inoperative, it is possible to recover control of the airplane with that engine still inoperative, and maintain straight flight either with zero yaw or, at the option of the applicant, with an angle of bank not more than five degrees. The method used to simulate critical engine failure must represent the modes of powerplant failure expected in service.

(b) For reciprocating engine powered airplanes, V_{MC} may not exceed 1.2 V_{S_1} (where V_{S_1} is determined at the maximum takeoff weight) with—

(1) Takeoff or maximum available power on the engines;

(2) The most unfavorable center of gravity;

(3) The airplane trimmed for takeoff;

(4) The maximum sea level takeoff weight (or any lesser weight necessary to show V_{MC});

(5) Flaps in the takeoff position;

(6) Landing gear retracted;

(7) Cowl flaps in the normal takeoff position;

(8) The propeller of the inoperative engine—

(i) Windmilling;

(ii) In the most probable position for the specific design of the propeller control; or

(iii) Feathered, if the airplane has an automatic feathering device; and

(9) The airplane airborne and the ground effect negligible.

(c) For turbine engine powered airplanes, V_{MC} may not exceed 1.2 V_{S_1} (where V_{S_1} is determined at the maximum takeoff weight) with—

(1) Maximum available takeoff power or thrust on the engines;

(2) The most unfavorable center of gravity;

(3) The airplane trimmed for takeoff;

(4) The maximum sea level takeoff weight (or any lesser weight necessary to show V_{MC});

(5) The airplane in the most critical takeoff configuration, except with the landing gear retracted; and

(6) The airplane airborne and the ground effect negligible.

(d) At V_{MC}, the rudder pedal force required to maintain control may not exceed 150 pounds, and it may not be necessary to reduce power or thrust of the operative engines. During recovery, the airplane may not assume any dangerous attitude and it must be possible to prevent a heading change of more than 20°.

Explanation. Section 23.149(a) presently reads "V_{MC} is the minimum calibrated airspeed at which, when any engine is suddenly made inoperative, * * *". For consistency with the definition in § 1.2 the proposal would replace the words "any engine" with "the critical engine."

Because of possible differences in the design features or characteristics of reciprocating engine powered and turbine engine powered airplanes the proposal treats these classes of airplanes in separate paragraphs, § 23.149 (b) and (c). To cover the various possible failure modes of turbopropeller engine installations, the proposal would add a requirement in paragraph (a) stating that the method used to simulate critical engine failure must represent the modes of powerplant failure expected in service.

Section 23.149 presently states that V_{MC} may not exceed 1.2 V_{S_1}. Since the

value of V_{S_1} varies with the airplane weight, the proposal would add in paragraph (b) and (c) the parenthetical statement "(where V_{S_1} is determined at the maximum takeoff weight)" to clarify the rule and simplify showing compliance with the upper limit for V_{MC}. However, since some airplanes may have a V_{MC} lower than the V_{S_1} for maximum takeoff weight, the proposal would require demonstration at any lesser weight necessary to show V_{MC}.

The proposal for § 23.149(d) would replace present § 23.149(b). Also new paragraph (d) would set forth the 150 pound rudder force limit directly instead of referencing § 23.143, and would use terms that are appropriate for turbine as well as reciprocating engine powered airplanes.

In Airworthiness Review Notice Number 2 [Notice 75–10] a proposal was made to revise the second sentence of § 23.149 (b). The change is reproposed in this notice for clarity as the second sentence in new paragraph (d). All comments received in response to the proposal in Notice Number 2 or to this notice will be considered by the FAA before a final rule is adopted.

Ref. Proposal Nos. 606/607, 75; §§ 23.149, 23.149(a)(b); Agenda Item C–12.

6–14. By revising § 23.161(c) to read as follows:

§ 23.161 Trim.

* * * * *

(c) *Longitudinal trim.* The airplane must maintain longitudinal trim under each of the following conditions:

(1) A climb with maximum continuous power at a speed between V_X and 1.4 V_{S_1}, with—

(i) The landing gear and wing flaps retracted; and

(ii) The landing gear retracted and the wing flaps in the takeoff position.

(2) A power approach with a 3° angle of descent, the landing gear extended; and with—

(i) The wing flaps retracted and at a speed of 1.4 V_{S_1};

(ii) The most forward center of gravity approved for the maximum takeoff weight, and at the applicable airspeed and flap position used in showing compliance with § 23.75; and

(iii) The most forward center of gravity approved regardless of weight, at the applicable airspeed and flap position used in showing compliance with § 23.75.

(3) Level flight at any speed from 0.9 V_H to either V_X or 1.4 V_{S_1}, with the landing gear and wing flaps retracted.

* * * * *

Explanation. See the proposal for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight.

Ref. Proposal No. 608; § 23.161(c); Agenda Item B–5.

§ 23.177 [Amended]

6–15. By deleting § 23.177 (a)(4) and (b)(3) and revising the heading of the section to read—"Static directional and lateral stability."

Explanation. This proposal, along with the proposal for § 23.181 is intended to clarify the regulations by transferring the directional and lateral dynamic stability requirements in § 23.177 (a)(4) and (b)(3) to § 23.181, which presently contains the longitudinal dynamic stability requirements.

Ref. Proposal No. 610; § 23.177; Agenda Item C–14.

6–16. By revising § 23.181 and its heading to read as follows:

§ 23.181 Dynamic stability.

(a) *Longitudinal dynamic stability.* Any short period longitudinal oscillation occurring between the stalling speed and the maximum allowable speed appropriate to the configuration of the airplane must be heavily damped with the primary controls—

(1) Free; and

(2) In a fixed position.

(b) *Lateral and directional dynamic stability.* Any short period lateral or directional oscillation occurring between the stalling speed and the maximum allowable speed appropriate to the configuration of the airplane must be damped to 1/10 amplitude in 7 cycles with the primary controls—

(1) Free; and

(2) In a fixed position.

Explanation. This proposal would place the lateral and directional dynamic stability requirements in § 23.181. (See the proposal for § 23.177). In addition, this proposal would change the lateral and directional dynamic stability requirements by replacing the term "heavily damped", by a definite requirement that any short period oscillation must be damped to 1/10 amplitude in 7 cycles. Flight test experience indicates that this would be a satisfactory damping ratio, in lieu of heavily damped, for lateral and directional dynamic stability.

Ref. Proposal No. 610; § 23.177; Agenda Item C–14.

6–17. By adding a new § 23.183 to read as follows:

§ 23.183 Spiral divergence.

With the airplane lateral and directional trim, power, speed and configuration used to demonstrate compliance with § 23.161(b) the following requirement must be met:

(a) The airplane must be established in a coordinated 20° banked turn with the longitudinal trim adjusted to maintain the airspeed used to demonstrate compliance with § 23.161(b).

(b) With the airplane established in the 20° banked turn in paragraph (a) of this section the controls must be released and the bank angle may not increase to more than 40° in less than 12 seconds.

Explanation. Tests have indicated that pilot workload may become excessive when the degree of spiral divergence results in a doubling of bank angle in less than 12 seconds. This proposal would establish a specific standard for demonstration of this characteristic during flight tests. It would require under the conditions set forth that the angle of bank may not go from 20° to 40° in less than 12 seconds.

Ref. Proposal No. 611; § 23.183; Agenda Item C–16.

6–18. By revising § 23.221 (a), (b) and (c) and adding a new § 23.221(e) to read as follows:

§ 23.221 Spinning.

(a) *Normal category.* A single engine normal category airplane must either meet the requirements of paragraph (d) of this section or the following requirements:

(1) The airplane must meet the configuration and spin entry condition requirements of paragraph (e) of this section.

(2) Prior to normal recovery application of the controls, the spin test must proceed for three turns or four seconds, whichever takes longer. However, beyond three seconds, the spin may be discontinued when spiral characteristics appear.

(3) The airplane must recover from any point in the spin in not more than one and one-half additional turns after normal recovery application of the controls.

(4) The applicable airspeed limit and limit load factor may not be exceeded during the spin or recovery.

(5) There may be no back pressure on the primary flight controls during the spin or recovery. This may be shown by a tendency for the controls to return to the trimmed position when released at any point in the spin.

(6) It must be impossible to obtain uncontrollable spins with any use of the primary flight controls.

(b) *Utility category.* A single engine utility category airplane must meet the requirements of paragraphs (a), (c), or (d) of this section.

(c) *Acrobatic category.* An acrobatic category airplane must meet the following requirements:

(1) The requirements set forth in paragraph (a)(1) and paragraphs (a)(3) through (a)(6) of this section.

(2) Except as provided in paragraph (c)(3) of this section, prior to normal recovery application of the controls, the spin test must proceed for six turns or four seconds whichever takes longer. However, beyond three seconds, the spin may be discontinued when spiral characteristics appear.

(3) If a placard is installed prohibiting intentional spins with wing flaps extended, compliance may be shown with paragraph (a)(2) of this section for the flaps extended spin entry configurations, and the flaps may be retracted during recovery after rotation stops.

* * * * *

(e) *Configurations and spin entry conditions.* Except for airplanes meeting the requirements of paragraph (d) of this section, the applicable spin test must be demonstrated in sufficient combinations of the following configurations and spin entry conditions to show compliance for all combinations:

(1) The wing flaps, landing gear, and cowl flaps in each position approved for flight, except that, for normal category airplanes, the wing flaps and landing gear

may be retracted during recovery after rotation stops.

(2) The airplane in straight flight and in 60 degree banked turns.

(3) The engine at idle and at 75 percent maximum continuous power or thrust, except the power or thrust may be reduced to idle after one full turn or three seconds whichever takes longer.

Explanation. Under the requirements of §§ 23.1567(a) and 23.1583(e)(1), spins are not authorized for normal category airplanes, and a placard must be displayed in view of the pilot stating "No acrobatic maneuvers, including spins, approved." There is no intent to change this prohibition. However, nearly all pilots take their initial flight training and solo practice flights in single engine airplanes, and sometimes enter a spin inadvertently while practicing other maneuvers. Some pilots may spin intentionally, in spite of the placard statement.

Section 23.221(a) presently requires that a single engine normal category airplane be able to recover from a one-turn spin or a 3-second spin, whichever takes longer, in not more than one additional turn, with the controls used in the normal manner for recovery. Flight tests have indicated that for some airplanes, the spin characteristics change when the spin is continued beyond one turn, making recovery extremely difficult or impossible. The spin characteristics may also be affected adversely if the entry is made with power on, or from an accelerated maneuver, or by abnormal use of the controls in entry or recovery.

The proposal for § 23.221 would therefore require that single engine normal category airplanes be required to recover from a spin of three turns or four seconds, whichever takes longer, and that spin entries be made with power up to 75 percent maximum continuous power or thrust from straight flight and 60 degree banked turns. The present requirement that it must be impossible to obtain uncontrollable spins with any use of the controls would apply to the proposed three turn spin requirement, but would be limited to the primary flight controls, since power controls would be covered in a separate paragraph.

At present § 23.221 states that there may be no excessive back pressure (on the controls) during spin or recovery. The word "excessive" is open to different interpretations, for example from the pilot strength or spin characteristics viewpoints. Flight tests indicate that back pressure may be an unfavorable spin characteristic. The proposal would therefore permit no back pressure, and compliance could be shown by a tendency of the controls to return to the trimmed position. However, normal recovery application of the controls would still be permitted to meet the spin recovery requirement.

For clarity, the proposal would list the various spin entry configurations and conditions in a separate new paragraph, § 23.221(e). The introductory sentence would require that a sufficient number of the possible combinations be tested to show that the airplane meets the spin requirements in all combinations; thus the test program could be adjusted to arrive at the critical combinations.

For utility category airplanes, § 23.221(b) presently requires compliance with either the normal category or the acrobatic category spin requirements. However, § 23.221(d) provides for a class of airplanes that are characteristically incapable of spinning, and the proposal for § 23.221(b) would make this option available for utility category airplanes.

A proposal for § 23.1567(b) is made to ensure there is no misunderstanding concerning the present spin prohibition for utility category airplanes that do not comply with the acrobatic category spin requirements.

For acrobatic category airplanes, the proposal for § 23.221(c) would include the changes proposed for the normal category spin requirement; however, the six turn spin requirement would be retained because intentional spins are permitted for acrobatic category airplanes.

Ref. Proposal Nos. 613, 80; § 23.221; Agenda Item C–18.

§ 23.729 [Amended]

6–19. By amending § 23.729(f)(1) by deleting the last sentence and substituting the following:

If there is a manual shutoff for the warning device prescribed in this paragraph, the warning system must be designed so that, when the warning has been suspended after one or more throttle are closed, subsequent retardation of any throttle to or beyond the position for normal landing approach will activate the aural warning.

Explanation. See the proposal for § 25.729.

Ref. Proposal No. 89; §§ 23.729, 25.729; Agenda Items A–2, E–23.

6–20. By revising § 23.1043(b) to read as follows:

§ 23.1043 Cooling tests.

* * * * *

(b) *Maximum ambient atmospheric temperature.* A maximum ambient atmospheric temperature corresponding to sea level conditions of at least 100° F must be established as a limitation on the operation of the airplane. The assumed temperature lapse rate is 3.6° F per thousand feet of altitude above sea level until a temperature of −69.7° F is reached, above which altitude the temperature is considered constant at −69.7° F. However, for winterization installations, the applicant may select a maximum ambient atmospheric temperature corresponding to sea level conditions of less than 100° F.

* * * * *

Explanation. See the proposal for § 23.1521(e).

Ref. Proposal No. 714; § 23.1583(m); Agenda Item D–20.

§ 23.1047 [Amended]

6–21. By amending § 23.1047 by striking the term "§ 23.65(a)(1)" in § 23.1047(b)(1) and by inserting "§ 23.65" in place thereof.

Explanation. See the proposal for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight.

Ref. Proposal No. 654; § 23.1047; Agenda Items B–5 (Committee II), H–41 (Committee IV).

6–22. By revising § 23.1501 to read as follows:

§ 23.1501 General.

(a) Each operating limitation specified in §§ 23.1505 through 23.1527 and other limitations and information necessary for safe operation must be established.

(b) The operating limitations and other information necessary for safe operation must be made available to the crewmembers as prescribed in §§ 23.1541 through 23.1589.

Explanation. See the proposal for § 25.1501.

Ref. Proposal Nos. 706, 877, 962; §§ 25.1501, 27.1501, 29.1501; Agenda Items H–58, L–73, L–74.

6–23. By adding a new § 23.1521(e) to read as follows:

§ 23.1521 Powerplant limitations.

* * * * *

(e) *Ambient temperature.* Ambient temperature limitations (including limitations for winterization installations if applicable) must be established as the maximum atmospheric temperature at which compliance with the cooling provisions of §§ 23.1041 through 23.1047 is shown.

Explanation. The cooling tests requirements in present Parts 23, 25, 27, and 29 use different terminology. The term "maximum anticipated air temperature" is presently used in §§ 23.1043(b)(1), 27.1043(b), and 29.1043(b), and this temperature is defined as 100° F at sea level, decreasing at altitude. For turbine engine installations, § 23.1043(b)(2) uses the term "corrected hot day temperature" which is also 100° F at sea level. In Part 25, § 25.1043(b) uses the term "maximum ambient atmospheric temperature." This Part 25 section does not prescribe a definite temperature, but requires that a temperature (which would be selected by the applicant) must be established as a limitation on the operation of the airplane. In practice, applicants usually select a temperature of 100° F or higher to enable operation of the airplane in hot climates. Section 23.1043(b)(1) presently permits cooling to be shown for less than 100° F when the airplane is equipped with a winterization installation. Sections 25.1521(e) and 29.1521(e) presently establish ambient temperature operating limitations, but Parts 23 and 27 do not require such limitations.

The FAA believes that maximum ambient atmospheric temperature limitations should be treated uniformly in the various airplane and rotorcraft certification Parts.

The proposals for §§ 23.1043(b), 25.1043(b), 27.1043(b), and 29.1043(b) would establish 100° F at sea level as a lower limit for cooling tests but would permit the applicant to establish higher

temperatures. The exception for winterization installations would be included in all Parts.

The proposals for §§ 23.1521(e), 25.1521(e), 27.1521(f), 29.1521(e), 23.1583(b), 25.1583(b), 27.1583(b) and 29.1583(b) would make the airplane and rotorcraft certification Parts consistent with respect to ambient temperature limitations.

Ref. Proposal No. 714; § 23.1583(m); Agenda Item D–20.

6–24. By revising § 23.1523 to read as follows:

§ 23.1523 Minimum flight crew.

The minimum flight crew must be established so that it is sufficient for safe operation considering—

(a) The workload on individual crewmembers;

(b) The accessibility and ease of operation of necessary controls by the appropriate crewmember; and

(c) The kinds of operations authorized under § 23.1525.

Explanation. The proposal would update the minimum flight crew requirements of § 23.1523 to require consideration of the additional crew duties that may arise when IFR operations are authorized.

This section, as revised, would be consistent with present §§ 25.1523, 27.1523, 29.1523.

Ref. Proposal No. 707; § 23.1523(a), (b), (c); Agenda Item D–19.

6–25. By striking § 23.1541(d) and by revising § 23.1541(c) to read as follows:

§ 23.1541 General.

* * * * *

(c) For airplanes which are to be certificated in more than one category—

(1) The applicant must select one category upon which the placards and markings are to be based; and

(2) The placards and marking information for all categories in which the airplane is to be certificated must be furnished in the Airplane Flight Manual.

Explanation. See the proposal for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight.

Ref. Proposal No. 711; § 23.1581; Agenda Item B–5.

6–26. By deleting § 23.1559(a)(3), by striking the words "of more than 6,000 pounds maximum weight" from the first sentence of § 23.1559(a)(2), and by revising § 23.1559(a)(1) to read as follows:

§ 23.1559 Operations limitations placard.

(a) * * *

(1) For airplanes certificated in one category: The markings and placards installed in this airplane contain operating limitations which must be complied with when operating this airplane in the _____ category. (Insert category.) Other operating limitations which must be complied with when operating this airplane in this category are contained in the Airplane Flight Manual.

* * * * *

Explanation. See the proposal for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight.

Ref. Proposal No. 710; § 23.1559; Agenda Item B–5.

6–27. By revising § 23.1567(b) to read as follows:

§ 23.1567 Flight maneuver placard.

* * * * *

(b) For utility category airplanes, there must be—

(1) A placard in clear view of the pilot stating: "Acrobatic maneuvers are limited to the following _____" (list approved maneuvers and the recommended entry speed for each); and

(2) For those airplanes that do not meet the spin requirements for acrobatic category airplanes, an additional placard in clear view of the pilot stating: "Spins Prohibited."

* * * * *

Explanation. Although spins are not approved under the present rule for utility category airplanes that do not meet the acrobatic category airplane spin requirements, the FAA wants this prohibition to be clear and therefore believes an additional placard should be required. Also, see the proposal for § 23.221.

Ref. Proposal Nos. 613, 80; § 23.221; Agenda Item C–18.

6–28. By deleting § 23.1581(c) and marking it "[Reserved]", and by revising § 23.1581(a) to read as follows:

§ 23.1581 General.

(a) *Furnishing information.* An Airplane Flight Manual must be furnished with each airplane, and it must contain the following:

(1) Information required by §§ 23.1583 through 23.1589.

(2) Other information necessary for safe operation.

* * * * *

Explanation. See the proposal for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight. See the proposal for § 21.5 with respect to furnishing Airplane Flight Manuals for all newly manufactured Part 23 airplanes.

Also see the proposal for § 25.1581 for explanation concerning the deletion of § 23.1581(c).

A proposed change is also made for § 23.158(b) and (d) in Airworthiness Review Notice No. 2 (Notice 75–10).

Ref. Proposal Nos. 711, 827; §§ 23.1581(a), 25.1581(c); Agenda Items B–5, H–59.

6–29. By revising § 23.1583(b) to read as follows:

§ 23.1583 Operating limitations.

* * * * *

(b) *Powerplant Limitations.* The following information must be furnished:

(1) Limitations required by § 23.1521.

(2) Explanation of the limitations.

(3) Information necessary for marking the instruments required by §§ 23.1549 through 23.1553.

* * * * *

Explanation. This proposal is made to clarify § 23.1583(b). This same information has been required under the present rule, but this clarification should end the need for further interpretations. Also, see the Proposal for § 23.1521(e).

Ref. Proposal No. 714; § 23.1583(m); Agenda Item D–20.

6–30. By deleting § 23.1585(b) and marking it "[Reserved]"; and by revising § 23.1585(a) and adding a new § 23.1585(c)(4) to read as follows:

§ 23.1585 Operating procedures.

(a) For each airplane, information concerning normal and emergency procedures and other pertinent information necessary to safe operation must be furnished, including—

(1) The demonstrated crosswind velocity and procedures and information pertinent to operation of the airplane in crosswinds; and

(2) The airspeeds, procedures, and information pertinent to the use of the following airspeeds:

(i) The recommended climb speed and any variation with altitude.

(ii) V_x and any variation with altitude.

(iii) The approach speeds, including speeds for transition to the balked landing condition.

* * * * *

(c) * * *

(4) Procedures for takeoff determined in accordance with § 23.51.

* * * * *

Explanation. See the explanation for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight.

Ref. Proposal No. 715; § 23.1585; Agenda Item B–5.

6–31. By revising § 23.1587 to read as follows:

§ 23.1587 Performance information.

(a) *General.* For each airplane, the following information must be furnished:

(1) Any loss of altitude more than 100 feet, or any pitch more than 30° below flight level, occurring during the recovery part of the maneuver prescribed in § 23.201(b).

(2) The conditions under which the full amount of usable fuel in each tank can safely be used.

(3) The stalling speed, V_{S_0}, at maximum weight.

(4) The stalling speed, V_{S_1}, at maximum weight and with landing gear and wing flaps retracted, and the effect upon this stalling speed of angles of bank up to 60°.

(5) The takeoff distance determined under § 23.51, the airspeed at the 50-foot height, the airplane configuration (if pertinent), the kind of surface in the tests, and the pertinent information with respect to cowl flap position, use of flight—path control devices, and use of the landing gear retraction system.

(6) The landing distance determined under § 23.75, the airplane configuration (if pertinent), the kind of surface used in the tests, and the pertinent infor-

mation with respect to flap position and the use of flight-path control devices.

(7) The steady rate or gradient of climb determined under § 23.65 and § 23.77, the airspeed, power, and the airplane configuration.

(8) The calculated approximate effect on takeoff distance (paragraph (a)(5) of this section), landing distance (paragraph (a)(6) of this section), and steady rates of climb (paragraph (a)(7) of this section), of variations in—

(i) Altitude from sea level to 8,000 feet; and

(ii) Temperature at these altitudes from 60° F below standard to 40° F above standard.

(b) *Skiplanes.* For skiplanes, a statement of the approximate reduction in climb performance may be used instead of complete new data for skiplane configuration if—

(1) The landing gear is fixed in both landplane and skiplane configurations;

(2) The climb requirements are not critical; and

(3) The climb reduction in the skiplane configurations is small (30 to 50 feet per minute).

(c) *Multiengine airplanes.* For multiengine airplanes, the following information must be furnished:

(1) The loss of altitude during the one engine inoperative stall shown under § 23.205 (as measured from the altitude at which the airplane starts to pitch uncontrollably to the altitude at which level flight is regained) and the pitch angle during that maneuver.

(2) The best rate of climb speed or the minimum rate of descent speed with one engine inoperative.

(3) The speed used in showing compliance with the cooling and climb requirements of § 23.1047(d)(5), if this speed is greater than the best rate of climb speed with one engine inoperative.

(4) The steady rate or gradient of climb determined under § 23.67 and the airspeed, power, and airplane configuration.

(5) The calculated approximate effect on the climb performance determined under § 23.67 of variations in—

(i) Altitude from sea level to 8,000 feet in a standard atmosphere and cruise configuration; and

(ii) Temperature, at those altitudes, from 60° F below standard to 40° F above standard.

Explanation. See the proposal for § 23.51 concerning airplanes of less than 6,000 pounds maximum weight.

Also see the proposal for § 23.67 concerning one-engine-inoperative performance data for multiengine airplanes, and best rate of climb and cooling speeds.

A proposal was made in Airworthiness Review Notice Number 2 [Notice 75–10] to strike the second sentence from present § 23.1587(a)(2). The same change is reproposed in this notice for clarity. Comments to the Notice Number 2 proposal or to this proposal will be considered by the FAA before adoption of a final rule.

Ref. Proposal Nos. 716, 717; §§ 23.1587, 23.1587(c)(2); Agenda Items B–5, B–8.

PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

6–32. By deleting "—measured at a height of six feet above the runway." in the last phrase of § 25.21(d) and by adding a period in its place, and by adding a new § 25.21(f) to read as follows:

§ 25.21 Proof of compliance.

* * * * *

(f) When surface winds must be considered, the wind velocity must be measured at a height of 10 meters above the surface, or corrected for the difference between the height at which the wind velocity is measured and the 10 meter height.

Explanation. The National Weather Service is standardizing on a height of 10 meters above the surface for reporting winds at airports. The proposal would make the flight requirements consistent with the National Weather Service standard.

Ref. Proposal No. 1020; § 25.21(f); Agenda Item E–26.

6–33. By amending § 25.29 by deleting paragraph (a)(4), and by revising paragraph (a)(3) to read as follows:

§ 25.29 Empty weight and corresponding center of gravity.

(a) * * *

(3) Full operating fluids, including—

(i) Oil;

(ii) Hydraulic fluid; and

(iii) Other fluids required for normal operation of airplane systems, except water intended for water injection in the engines.

* * * * *

Explanation. See the proposal for § 23.29.

Ref. Proposal No. 152; § 25.29(a)(3); Agenda Item E–30.

6–34. By revising § 25.107(a) to read as follows:

§ 25.107 Takeoff speeds.

(a) V_1 must be established in relation to V_{EF} as follows:

(1) V_{EF} is the calibrated airspeed at which the critical engine is assumed to fail. V_{EF} must be selected by the applicant, but may not be less than V_{MCG} determined under § 25.149(e).

(2) V_1, in terms of calibrated airspeed, is the takeoff decision speed selected by the applicant; however V_1 may not be less than V_{EF} plus the speed gained with all engines operating during the recognition-reaction time interval. This interval is the sum of—

(i) The time between the instant at which the critical engine is failed, and the instant at which the pilot recognizes and reacts to the engine failure, as indicated by the pilot's application of the first retarding means during accelerate-stop tests; and

(ii) The time, not less than 2.0 seconds, to allow for time delays in service.

* * * * *

Explanation. "V_1" is now defined as the critical-engine-failure speed, and the accelerate-stop distance is established as the distance required to accelerate the airplane to V_1 and stop. Section 25.101(h) requires allowance for any time delays in the execution of procedures that may reasonably be expected in service. However, the regulations are not explicit as to where or how time delays should be introduced in relation to V_1. In flight testing, V_1 has been considered as the speed at which the pilot recognizes the engine failure, as evidenced by his initial action, with time delays for subsequent actions. In operations, it is common practice for one pilot to call out V_1 during takeoff, and for the other pilot to use this as a decision speed, i.e. to stop if he is aware of a problem before V_1 is called, or to continue the takeoff after V_1 is called. This decision by the pilot is often due to problems other than engine failure and this condition is not specifically described in the present performance requirements.

The proposal for § 25.107(a) takes the foregoing factors into account. To allow for time delays in service, including a surprise element, the proposal would provide that at least 2.0 seconds must be added to the test pilot recognition-reaction time. To allow for events other than engine failure, the speed gained during this time interval would be based on all engines operating. Also see the proposal for § 25.149(e) which includes an explanation of the new term V_{MCG}.

The speed at the end of the recognition-reaction time interval would be designated as "V_1", and this would be the speed at which the pilot is assumed to have made a decision to continue or discontinue the takeoff. To make this intent clear, the proposal for § 1.2 would change the definition of V_1 to "takeoff decision speed", with a parenthetical statement "(formerly denoted as critical engine failure speed)" added to cover the use of this term in existing Airplane Flight Manuals. For airplanes certificated under the proposed requirements, the critical-engine failure speed used in determining performance data would be denoted by a new symbol "V_{EF}", in § 25.107(a).

Under the foregoing concept, V_1 would be the same for both the "engine failure" and "other event" cases. However, the accelerate stop distance for the engine failure case may be greater or lesser than the distance for the all engines operating case, depending upon the accelerations characteristics of the particular airplane. The proposal for § 25.109(a) would therefore require that the longer of the two distances be established as the accelerate-stop distance.

The term "Accelerate-stop distance" and its definition in § 1.1 would be deleted. The proposals for § 25.107(a) and § 25.109(a) would make them inconsistent with the present definition of accelerate-stop distance in § 1.1. The airworthiness requirements applicable to a particular airplane would correctly define the accelerate-stop distance, and these distances would be included in its Airplane Flight Manual, along with the takeoff and landing distances. The takeoff and landing distances are not defined in Part 1 and there appears to be no need to retain a definition of accerelate-stop distance in that Part.

In determining the takeoff path with one-engine-inoperative, the critical engine is made inoperative at the critical-engine-failure speed, which is designated as V_{EF} in the proposal for § 25.107(a). Therefore, the proposal for § 25.111 (a) (2) and (a) (3) would substitute "V_{EF}" for "V_1".

Ref. Proposal Nos. 10, 15, 158, 159, 160, 1022, 1025, 1026, 1028, 1035; §§ 1.1, 1.2, 25.101, 25.107, 25.109, 25.111, 25.149; Agenda Item F–33.

6–35. By revising § 25.107 (d) and (e) (1) (iv) to read as follows:

§ 25.107 Takeoff speeds.

* * * * *

(d) V_{MU} is the calibrated airspeed at and above which the airplane can safely lift off the ground, and continue the takeoff. V_{MU} speeds must be selected by the applicant throughout the range of thrust-to-weight ratios to be certificated. These speeds may be established from free air data if these data are verified by ground takeoff tests.

(e) * * *

(1) * * *

(iv) A speed that, if the airplane is rotated at its maximum practicable rate, will result in a V_{LOF} of not less than 110 percent of V_{MU} in the all-engines-operating condition and not less than 105 percent of V_{MU} determined at the thrust-to-weight ratio corresponding to the one-engine-inoperative condition. The V_{MU} determined at the thrust-to-weight ratio corresponding to the one-engine-inoperative condition may not be less than the speed required to control the airplane with the critical engine inoperative during lift off and must take into account the drag which would result from trim and control surface deflections used to maintain control if the critical engine was inoperative.

* * * * *

Explanation. Flight testing to determine V_{MU} with one-engine-inoperative combines the problems of attempting to takeoff at the lowest possible speed with the difficulties of maintaining directional control. The required speed margins between V_{MU} and the operational takeoff speeds, and flight test experience indicate that it may be appropriate to determine V_{MU} with all engines operating at reduced thrust simulating the one-engine-inoperative thrust to weight ratio.

It would be necessry to show that this speed is adequate for control with the critical engine inoperative during lift off and that the resulting drag due to trim and control surface deflection which would be used to maintain control has been accounted for.

Ref. Proposal No. 1024; § 25.107(d); Agenda Item F–38.

6–36. By revising § 25.109(a) to read as follows:

§ 25.109 Accelerate-stop distance.

(a) The accelerate-stop distance is the greater of the following distances:

(1) The sum of the distances necessary to—

(i) Accelerate the airplane from a standing start to V_{EF} with all engines operating;

(ii) Accelerate the airplane from V_{EF} to V_1, assuming the critical engine fails at V_{EF}; and

(iii) Come to a full stop from the point at which V_1 is reached, assuming that the pilot does not apply any means of retarding the airplane until V_1 is reached and that the critical engine is still inoperative.

(2) The sum of the distances necessary to—

(i) Accelerate the airplane from a standing start to V_1 with all engines operating; and

(ii) Come to a full stop from the point at which V_1 is reached, assuming that the pilot does not apply any means of retarding the airplane until V_1 is reached.

* * * * *

Explanation. See the proposal for § 25.107(a).

Ref. Proposal Nos. 158, 159, 1025, 1026; §§ 25.107, 25.109; Agenda Item F–33.

§ 25.111 [Amended]

6–37. By amending § 25.111(a) (2) and (a) (3) by deleting "V_1" and substituting in both places "V_{EF}".

Explanation. See the proposal for §§ 25.107(a).

Ref. Proposal Nos. 1025, 160, 1028; §§ 25.107, 25.111; Agenda Item F–33.

6–38. By adding a new § 25.121(c) to read as follows:

§ 25.121 Climb: one-engine-inoperative.

* * * * *

(c) *One-engine-inoperative transition.* With the airplane in the landing configuration, but with the critical engine inoperative, at the speed recommended for approach with one-engine-inoperative but not less than 1.3 V_S and stabilized on a 3° descent path, a demonstration of the airborne transition to the stabilized climb condition prescribed in paragraph (d) of this section must be made. The vertical distance, in feet, between the point at which the transition is initiated and the lowest point in the resulting flight path must be determined. Testing must be conducted out of ground effect, at maximum landing weight, with all landing flap positions for which approval is requested.

Explanation. It is not uncommon that an airplane has to make an approach with an engine inoperative. The proposal would require that the vertical distance required to transition from a 3° descent path in the landing configuration to a climb in the approach configuration be determined. This information should be presented to the pilot in the Airplane Flight Manual.

Also see the proposal for § 25.1587.

Ref. Proposal No. 1029; § 25.121(c); Agenda Item F–40.

§ 25.123 [Amended]

6–39. By amending § 25.123(a) by deleting the word "may" in the second sentence and by adding the word "must" in its place.

Explanation. The present provision for computations of enroute flight paths does not require consideration of the variations in weight due to the consumption of fuel and oil. Enroute performance information presented in the Airplane Flight Manual includes the data computed under this section. Thus, the variations in weight due to fuel and oil consumption have not always been determined and the Airplane Flight Manual has not always contained the complete enroute flight path performance data desired for operational use.

Ref. Proposal No. 1030; § 25.123(a); Agenda Item F–41.

6–40. By amending § 25.143 by deleting "180" under yaw in the table of § 25.143 (c) and inserting "150" in its place, and by revising § 25.143(b) to read as follows:

§ 25.143 General.

* * * * *

(b) It must be possible to make a smooth transition from one flight condition to any other flight condition without exceptional piloting skill, altertness or strength, and without danger of exceeding the airplane limit-load factor under any probable operating conditions, including—

(1) The sudden failure of the critical engine, and for airplanes with three or more engines, the subsequent sudden failure of the second critical engine; and

(2) Configuration changes, including deployment or retraction of deceleration devices.

* * * * *

Explanation. The proposal for § 25.143 (c) would reduce the maximum permissible rudder force for temporary application in meeting the controllability requirements, from 180 pounds to 150 pounds, because flight test experience has shown that 180 pounds may make control difficult for some pilots under some flight conditions.

Section 25.143 presently contains general requirements on controllability, including the sudden failure of any engine. For airplanes with three or more engines, the proposals for § 25.149 contain specific requirements on the minimum control speed for sudden failure of a second critical engine during a landing approach, and this proposal for § 25.143 (b) (1) would provide a general requirement covering the failure of a second critical engine in other flight conditions.

The proposal would also add a general requirement on controllability during configuration changes, including the deployment or retraction of deceleration devices, since these are not covered in the specific configuration change requirements under §§ 25.145 through 25.147.

Ref. Proposal No. 1032; § 25.143; Agenda Item G–44.

6–41. By amending § 25.149 by—

1. Deleting paragraph (b) and redesignating paragraph (a) as paragraph (b);

2. Deleting "180" in paragraph (d) and inserting in its place "150"; and

3. Revising the paragraph (c) lead in and adding new paragraphs (a), (e), (f), (g) and (h) to read as follows:

§ 25.149 Minimum control speed.

(a) In establishing the minimum control speeds required by this section, the method used to simulate critical engine failure must represent the modes of powerplant failure expected in service.

* * * * * *

(c) V_{MC} may not exceed 1.2 V_S with—

* * * * * *

(e) V_{MCG}, the minimum control speed on the ground, is the calibrated airspeed during the takeoff run, at which, when the critical engine is suddenly made inoperative, it is possible to recover control of the airplane with the use of primary aerodynamic controls alone (without the use of nose-wheel steering) to enable the takeoff to be safely continued using normal piloting skill and rudder control forces not exceeding 150 pounds. Assuming that the ground track of the airplane accelerating with all engines operating is along the centerline of the runway, its ground track after the critical engine is made inoperative may not deviate more than 30 feet laterally from the centerline at any point, and must be parallel to or converging toward the centerline when the airplane is rotated for takeoff. V_{MCG} must be established with—

(1) The airplane in the most critical takeoff configuration;

(2) Maximum permissible takeoff power or thrust on the operating engines;

(3) The most unfavorable center of gravity;

(4) The airplane trimmed for takeoff; and

(5) The most unfavorable weight in the range of takeoff weights.

(f) V_{MCL}, the minimum control speed during landing approach with all engines operating, is the calibrated airspeed at which, when the critical engine is suddenly made inoperative, it is possible to recover control of the airplane with that engine still inoperative, and maintain straight flight either with zero yaw or, at the option of the applicant, with an angle of bank of not more than 5 degrees. V_{MCL} must be established with—

(1) The airplane in the most critical configuration for approach with all engines operating;

(2) The most unfavorable center of gravity;

(3) The airplane trimmed for approach with all engines operating;

(4) The maximum sea level landing weight (or any lesser weight necessary to show V_{MCL}); and

(5) Maximum permissible power or thrust on the operating engines.

(g) For airplanes with three or more engines, V_{MCL-2}, the minimum control speed during landing approach with one critical engine inoperative, is the calibrated airspeed at which, when a second critical engine is suddenly made inoperative, it is possible to recover control of the airplane with both engines still inoperative and maintain straight flight either with zero yaw or, at the option of the applicant, with a bank angle of not more than 5 degrees. V_{MCL-2} must be established with—

(1) The airplane in the most critical configuration for approach with the critical engine inoperative;

(2) The most unfavorable center of gravity;

(3) The airplane trimmed for approach with the critical engine inoperative;

(4) The maximum sea level landing weight (or any lesser weight necessary to show V_{MCL-2}); and

(5) Maximum permissible power or thrust on the operating engines.

(h) The rudder control forces required to maintain control at V_{MCL}, and V_{MCL-2} may not exceed 150 pounds nor may it be necessary to reduce power or thrust of the operating engines. In addition, the airplane may not assume any dangerous attitudes or require exceptional piloting skill, alertness, or strength to prevent a divergence in the approach flight path that could jeopardize continued safe approach when the critical engine is suddenly made inoperative, and when power or thrust on the operating engines is rapidly changed from the power or thrust required to maintain an approach path angle of 3 degrees, to—

(1) Minimum available power or thrust, and

(2) Maximum permissible power or thrust.

Explanation. Present paragraph (b) is deleted and the applicability phrase of paragrah (c) is revised for consistency with the proposals delete §§ 25.49 through 25.75 in Airworthiness Review Program Notice Number 2 [Notice 75–10]. The proposals in Notice Number 2 would establish the same performance regulations for turbine engine and reciprocating engine powered airplanes. Therefore, this proposal for § 25.149 would establish consistent requirements for determining minimum control speeds for these airplanes. To ensure that the various possible failure modes of different powerplants on these airplanes are given adequate consideration, a new paragraph (a) is added.

The proposal for § 25.149(d) would reduce the maximum permissible rudder force used in determining V_{MC}, from 180 pounds to 150 pounds, because flight test experience indicates that 180 pounds may make control too difficult for some pilots under some flight conditions.

Section 25.107(a) presently contains a ground controllability requirement in the determination of V_1. A proposal for § 25.107(a) makes it desirable for clarity to transfer the ground control provisions to § 25.149. The proposal for § 25.149(e) would require the determination of V_{MCG}, the minimum control speed on the ground for the sudden failure of the critical engine during the takeoff roll. During this demonstration, the permissible lateral deviation of the path of the airplane would be limited to 30 feet.

The proposal for § 25.149(f) would require the determination of a minimum control speed, V_{MCL}, at which the airplane can be safely controlled when an engine fails suddenly during a landing approach. For airplanes with three or more engines, the proposal for § 25.149 (g) would require the determination of a minimum control speed V_{MCL-2}, at which the airplane can be safely controlled when an approach is initiated with one engine inoperative and another engine fails during the approach. The information that would be obtained under the proposals for V_{MCL} and V_{MCL-2} should add to the safety of service and training operations.

Ref. Proposal Nos. 1035, 171, 1025; §§ 25.149, 25.107; Agenda Item G–47.

6–42. By revising § 25.177(b) to read as follows:

§ 25.177 Static directional and lateral stability.

* * * * * *

(b) The static lateral stability (as shown by the tendency to raise the low wing in a sideslip with the aileron controls free and for any landing gear and flap position and symmetrical power condition) may not be negative in the following airspeed ranges:

(1) From 1.2 V_{S_1} to V_{MO}/M_{MO}.

(2) From V_{MO}/M_{MO} to V_{FC}/M_{FC} unless the Administrator finds that the divergence is—

(i) Gradual;

(ii) Easily recognizable by the pilot; and

(iii) Easily controllable by the pilot.

* * * * * *

Explanation. The present provision requires that the static lateral stability in specified configurations must be positive at V_{FE}, V_{LE} or V_{FC}/M_{FC} (as appropriate) and may not be negative at 1.2 V_S. The proposal would require neutral or positive static lateral stability between 1.2 V_{S_1} and V_{MO}/M_{MO} and would allow negative static lateral stability between V_{MO}/M_{MO} and V_{FC}/M_{FC} under certain conditions. FAA flight test experience has indicated that positive static lateral stability in large airplanes is not necessary and that such a requirement would not appreciably increase safety.

Ref. Proposal No. 175; § 25.177; Agenda Item G–50.

6–43. By revising § 25.181 and its heading to read as follows:

§ 25.181 Dynamic stability.

(a) Any short period oscillation, not including combined lateral-directional oscillations, occurring between stalling speed and maximum allowable speed appropriate to the configuration of the airplane must be heavily damped with the primary controls—

(1) Free; and

(2) In a fixed position.

(b) Any combined lateral-directional oscillations ("Dutch Roll") occurring between stalling speed and maximum allowable speed appropriate to the configuration of the airplane must be positively damped with controls free, and must be controllable with normal use of the primary controls without requiring exceptional pilot skill.

Explanation. Section 25.181 presently requires that all short period dynamic longitudinal, directional, and lateral short period oscillations must be heavily damped. Flight tests have indicated that the combined lateral-directional oscillation known as "Dutch Roll" need not be heavily damped, but should be positively damped with controls free and should be controllable with normal use of the primary controls without requiring exceptional pilot skill.

The proposal for § 25.181(a) would provide an exception from the heavily damped requirement, and paragraph (b) would be added to require only positive damping of combined lateral-directional oscillations.

This proposal would also delete the parenthetical expression from present § 25.181 to avoid any possible confusion. The requirement as set forth, does not limit consideration to those speeds denoted in the parenthetical expression.

Ref. Proposal Nos. 1037, 176; § 25.181; Agenda Item G–51.

6–44. By deleting § 25.201(c)(2), redesignating § 25.201 (c)(3) as (c)(2), and by adding a new § 25.201(d) to read as follows:

§ 25.201 Stall demonstration.

• • • • •

(d) Occurrence of stall is defined as follows:

(1) The airplane may be considered stalled when, at an angle of attack measurably greater than that for maximum lift, the inherent flight characteristics give a clear and distinctive indication to the pilot that the airplane is stalled. Typical indications of a stall, occurring either individually or in combination, are—

(i) A nose down pitch that cannot be readily arrested;

(ii) A roll that cannot be readily arrested; or

(iii) If clear enough, a loss of control effectiveness, an abrupt change in control force or motion, or a distinctive shaking of the pilot's controls.

(2) On an airplane demonstrating an unmistakable inherent aerodynamic warning (in one or more configurations) of a magnitude and severity that is a strong and effective deterrent to further speed reduction, the airplane may be considered stalled when it reaches the speed at which the effective deterrent is clearly manifested.

Explanation. Section 25.201(c)(2) presently states that the airplane is considered stalled when, at an angle of attack measurably greater than that for maximum lift, the inherent flight characteristics give a clear and distinctive indication to the pilot that the airplane is stalled. An exception to the basic stall description "at an angle of attack measurably greater than that for maximum lift" is made for airplanes "demonstrating unmistakable inherent aerodynamic warning, associated with the stall in all required configurations, of a magnitude and severity that is a strong and effective deterrent to further speed reduction • • •."

Flight tests have shown that some airplanes provide an "effective deterrent" in some configurations, and meet the "angle of attack beyond maximum lift" description in other configurations. Since § 25.207 requires that a stall warning begin at a speed well above the stall speed established under § 25.201, it appears unnecessary to restrict the "effective deterrent" exception to those airplanes that provide the deterrent in all required configurations. The proposal would therefore make the "effective deterrent" exception available for one or more configurations. For clarity, the description of the conditions under which the airplane is considered to be stalled would be transferred from § 25.201(c)(2) to a new paragraph (d). It would also clarify the rule by placing the typical indications of stall after the basic description, and by stating the exception last.

Ref. Proposal No. 177; § 25.201; Agenda Item G–53.

§ 25.207 [Amended]

6–45. By deleting the term "§ 25.201(c)(2)" in § 25.207(c) and inserting in its place "§ 25.201(d)", and by adding a sentence at the end of § 25.207(b) to read as follows:

If a warning device is used, it must provide a warning in each of the airplane configurations prescribed in paragraph (a) of this section at the speed prescribed in paragraph (c) of this section.

Explanation. The proposal to amend § 25.201 deletes the present § 25.201(c)(2) and sets forth revised requirements as a new § 25.201(d).

Under the proposal for § 25.201(d), an airplane could have inherent aerodynamic stall warning in one or more but not all of the required configurations. The proposal for § 25.207(b) would require that the warning device provide the prescribed warning in all required configurations at the required speed.

Ref. Proposal No. 177; § 25.201; Agenda Item G–53.

§ 25.233 [Amended]

6–46. By amending § 25.233(a), by deleting "0.2 V_{SO}" and substituting "25 knots."

Explanation. This proposal would make § 25.233(a) consistent with the proposal for § 25.237(a).

Ref. Proposal Nos. 1020, 1039, 1040; §§ 25.21, 25.233, 25.237; Agenda Item E–26.

6–47. By revising § 25.237 to read as follows:

§ 25.237 Wind velocities.

(a) For landplanes and amphibians, a 90° cross component of wind velocity, must be established—

(1) For dry runways, for which the established cross component demonstrated to be safe for takeoff and landing, must be at least 25 knots; and

(2) For wet runways, for which the established cross component may be determined by analysis to be safe for takeoff and landing.

(b) For seaplanes and amphibians, the following wind velocities must be established:

(1) A 90° cross component of wind velocity, not less than 25 knots, up to which takeoff and landing is safe under all water conditions that may reasonably be expected in normal operation.

(2) A wind velocity of not less than 25 knots, for which taxiing is safe in any direction under all water conditions that may reasonably be expected in normal operation.

Explanation. The ability of transport category airplanes to takeoff and land in cross winds has become increasingly important because of the high cost of building airports with runways in more than one direction and the use of preferential runways for noise abatement. Operation of these airplanes at airports with only one available runway would involve safety as well as economic considerations.

The proposal would establish 25 knots as the minimum cross wind component for landplanes, to be demonstrated on dry runways. Operating experience indicates that it would also be desirable to establish a safe cross wind component for operation on wet runways. Due to the difficulty of obtaining suitable combinations of cross wind and runway surface conditions during flight tests, the proposal would permit analysis to be used in establishing the cross wind component for wet runways.

The proposal would also require wind velocities to be established for takeoff, landing, and taxiing of seaplanes and amphibians.

Ref. Proposal Nos. 1020, 1041, 1040; §§ 25.21, 25.233, 25.237; Agenda Item E–26.

§ 25.251 [Amended]

6–48. By deleting the word "perceptible" in the first sentence of § 25.251(e) and by adding the following after the first sentence in § 25.251(e):

The onset of buffet is defined as that degree of buffet which would be distinguishable from air turbulence but in no case greater than ±0.05g measured at the pilot's station.

Explanation. The proposal would add a quantitative definition as to what constitutes buffet onset. Under the present rules this determination is based on subjective pilot opinion. Flight test experience has shown that 0.05g corresponds closely with the pilot's determination of buffet onset.

Ref. Proposal No. 179; § 25.251; Agenda Item G–54.

6–49. By adding a new § 25.255 to read as follows:

§ 25.255 Out-of-trim characteristics.

From an initial condition with the airplane trimmed at cruise speeds up to V_{MO}/M_{MO}, the airplane must have satisfactory maneuvering stability and controllability with the degree of out-of-trim in both the airplane nose up and nose down directions, which results from a three-second movement of the primary longitudinal trim system at its normal rate with no aerodynamic load, or the maximum mistrim that can be sustained

by the autopilot while maintaining level flight in the high speed cruising condition, whichever is greater. In this out-of-trim condition:

(a) The stick force per g curve must have a positive slope between 1g and +2.5g's at speeds up to V_{FC}/M_{FC} and there may not be reversal of the primary longitudinal control force at speeds up to V_{DF}/M_{DF} except that lesser acceleration values may be used at altitudes and speeds where buffet envelopes are established in accordance with § 25.251(e).

(b) Compliance with the provisions of paragraph (a) of this section must be demonstrated in flight over the normal acceleration range of—

(1) −1g to +2.5g's; or

(2) 0g to 2.0g's, and extrapolating by an acceptable method to −1g and +2.5g's.

(c) If the procedure set forth in paragraph (b)(2) of this section is used to demonstrate compliance and marginal conditions exist during flight test with regard to reversal of primary longitudinal control force, flight tests must be accomplished from the normal acceleration at which a marginal condition is found to exist to the applicable limit specified in paragraph (a) of this section.

(d) It must be possible from an overspeed condition at V_{DF}/M_{DF} to produce at least 1.5g's for recovery by applying not more than 125 pounds of longitudinal control force using either the primary longitudinal control alone or the primary longitudinal control and the longitudinal trim system. If the longitudinal trim is used to assist in producing the required load factor it must be shown at V_{DF}/M_{DF} that the longitudinal trim can be actuated in the airplane nose up direction with the primary surface loaded to correspond to the least of the following airplane nose up control forces:

(1) The maximum control forces expected in service as specified in §§ 25.301 and 25.397.

(2) The control force required to produce 1.5g's.

(3) The control force corresponding to buffeting or other phenomena of such intensity that it is a strong deterrent to further application of primary longitudinal control force.

(f) Recovery from normal accelerations less than 1g must be accomplished without exceeding V_{DF}/M_{DF}.

Explanation. Service experience indicates that out-of-trim conditions can occur in flight for various reasons, and that the control and maneuvering characteristics of the airplane may be critical in recovering from upsets. For flight test purposes, the proposal would simulate the out-of-trim conditions by requiring the longitudinal trim control to be displaced from the trimmed position by the amount resulting from movement of the trim system at its normal rate with no aerodynamic load, or the maximum mistrim that the autopilot can sustain in level flight in the high speed cruise condition, whichever is greater. The proposal would require the maneuvering characteristics, including stick force per g, to be explored throughout a specified maneuver load factor speed envelope. The dive recovery characteristics would be investigated to determine that safe recovery can be made from the demonstrated flight dive speed, V_{DF}/M_{DF}.

Ref. Proposal No. 1033–1; § 25.144; Agenda Item G–45.

6–50. By adding a new § 25.703 following § 25.701 to read as follows:

§ 25.703 Takeoff warning system.

A takeoff warning system must be installed and must meet the following requirements:

(a) The system must provide an aural and visual warning to the pilots during the takeoff run if the airplane is in a configuration, including any of the following, that would not permit a safe takeoff:

(1) The wing flaps, or leading edge devices are not within the approved range of takeoff positions.

(2) Wing spoilers (except lateral control spoilers meeting the requirements of § 25.671), speed brakes, or longitudinal trim devices are in a position that would not permit a safe takeoff.

(b) When required by paragraph (a) of this section, the warning for the system must be automatically activated during the initial portion of the takeoff roll and must continue until the configuration is changed to permit a safe takeoff, the takeoff roll is terminated, or the warning is manually deactivated by the pilot.

(c) The means used to activate the system must function properly throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested.

(d) The system must be designed to provide reliable sensing of an unsafe position of each critical aerodynamic surface.

Explanation. The proposal would require a system to warn the pilots during the initial takeoff roll if the airplane is in a configuration that would prevent successful completion of the takeoff. Wing flaps and associated leading edge devices pose a special problem because some airplanes have takeoff flap settings that vary with weight, altitude, temperature, and runway length. A warning system that accounts for these variables would be extremely complex, and would still require the pilot to enter the proper input data. In the interest of reliability, the proposal would require the system to give a warning when the flaps or leading edge devices are not within the approved range of takeoff positions. The system should warn the pilots when they have not placed the flaps in an approved takeoff position or have retracted the flaps inadvertently, or if the flaps fail to move from the retracted position in response to a control input. Since throttle position may be used as a means to sense the start of the takeoff run and the takeoff throttle setting may vary considerably with temperature, altitude, and the use of reduced thrust procedures, this proposal would require the takeoff sensing means to function properly over the ranges of takeoff weights, altitudes, and temperatures for which certification is requested. Due to the possibility of failures or malfunctions in aerodynamic surface control systems between the pilots' controls and the surfaces, the proposal would require the takeoff warning system be designed to provide reliable sensing of an unsafe position of each critical surface.

Ref. Proposal No. 220; § 25.659; Agenda Item E–24.

6–51. By revising § 25.729(e)(3) to read as follows:

§ 25.729 Retracting mechanism.

* * * * * * *

(e) * * *

(3) If there is a manual shutoff to silence the aural warning device prescribed in paragraph (e)(2) of this section, the warning system must be designed so that, when the warning has silenced after one or more throttles are closed, subsequent retardation of any throttle to or beyond the position for a normal landing approach will activate the aural warning.

* * * * * * *

Explanation. The present rule requires that a manual shutoff for the aural landing gear warning device be installed so that reopening the throttle will reset the device. However, when an engine has been shut down in flight, its throttle may not be reopened before landing. The proposal would require the aural warning to be activated when any throttle is subsequently retarded to or beyond the position for a normal landing approach, thus requiring the warning intended by paragraph (e)(2) regardless of the position of any other throttle and the prior deactivation.

Ref. Proposal No. 89; §§ 23.729, 25.729; Agenda Item E–23.

§ 25.1043 [Amended]

6–52. By amending § 25.1043(b) in a manner substantively identical to that proposed for § 23.1043(b).

6–53. By revising § 25.1501 to read as follows:

§ 25.1501 General.

(a) Each operating limitation specified in §§ 25.1503 through 25.1533 and other limitations and information necessary for safe operation must be established.

(b) The operating limitations and other information necessary for safe operation must be made available to the crewmembers as prescribed in §§ 25.1541 through 25.1587.

Explanation. Section 25.1501 is the introductory general section for Subpart G, Operation Limitations and Information, which covers three main subjects, i.e., the establishment of operating limitations, the information required on markings and placards, and the information required to be furnished in an Airplane Flight Manual.

By referring to appropriate sections of Subpart G, the proposal for § 25.1501 would make it clear that operating limi-

tations must be established and would also clarify what information must be made available to the crewmembers in a particular form.

Also see the proposal § 25.1581.

Ref. Proposal Nos. 706, 877, 962; §§ 25.1501, 27.1501, 29.1501; Agenda Items H–58, L–73, L–74.

6–54. By revising § 25.1521(e) to read as follows:

§ 25.1521 Powerplant limitations.

* * * * *

(e) *Ambient temperature.* Ambient temperature limitations (including limitations for winterization installations if applicable) must be established as the maximum ambient atmospheric temperature at which compliance with the cooling provisions of §§ 25.1041 through 25.1045 is shown.

Explanation. See the proposal for § 23.1521(e).

Ref. Proposal No. 714; § 23.1583(m); Agenda Item D–20.

6–55. By deleting § 25.1581(c) and marking it "[Reserved]"; and by revising § 25.1581 (a) and (b) to read as follows:

§ 25.1581 General.

(a) *Furnishing information.* An Airplane Flight Manual must be furnished with each airplane, and it must contain the following:

(1) Information required by §§ 25.1583 through 25.1587.

(2) Other information necessary for safe operation.

(b) *Approved information.* Each part of the manual listed in §§ 25.1583 through 25.1587, that is appropriate to the airplane, must be furnished, verified and approved, and must be segregated, identified and clearly distinguished from each unapproved part of that manual.

* * * * *

Explanation. Section 25.1581 presently requires that each part of the Airplane Flight Manual listed in §§ 25.1583 through 25.1587 be furnished, verified, approved, etc., and that information not specified in these sections must also be furnished if it is required for safe operation because of unusual design, operating, or handling characteristics.

The FAA believes that the qualifying clause "because of unusual design, operating, or handling characteristics" in present § 25.1581(c) is too restrictive in limiting the additional information in the Flight Manual. Even though certain design, operating, or handling characteristics of a particular airplane type are similar to those characteristics in some other airplane types, information concerning those characteristics may be necessary for safety. The proposal for § 25.1581(a)(2) would therefore require "other information necessary for safe operation," without the present qualifying clause.

The term in § 25.1581(a) "Unless otherwise prescribed" would be deleted as inappropriate for the type certification rules. Also see the proposal for § 121.141(b).

Airworthiness Review Notice No. 2 [Notice 75–10] contains a proposal to add a new § 25.1581(d).

Ref. Proposal No. 827; § 25.1581(c); Agenda Item H–59.

6–56. By amending § 25.1583(b) in a manner substantively identical to that proposed for § 23.1583(b); and by revising § 25.1583(c) and by adding a new § 25.1583(i) to read as follows:

§ 25.1583 Operating limitations.

* * * * *

(c) *Weight and loading distribution.* The weight and center of gravity limits required by §§ 25.25 and 25.27 must be furnished in the Airplane Flight Manual. All of the following information must be presented either in the Airplane Flight Manual or in a separate weight and balance control and loading document which is incorporated by reference in the Airplane Flight Manual:

(1) The condition of the airplane and the items included in the empty weight as defined in accordance with § 25.29.

(2) Loading instructions necessary to ensure loading of the airplane within the weight and center of gravity limits, and to maintain the loading within these limits in flight.

(3) If certification for more than one center of gravity range is requested, the appropriate limitations, with regard to weight and loading procedures, for each separate center of gravity range.

* * * * *

(i) *Maneuvering flight load factors.* The positive maneuvering limit load factors for which the structure is proven, described in terms of accelerations, and a statement that these accelerations limit the angle of bank in turns and limit the severity of pull-up maneuvers, must be furnished.

Explanation. A series of airplanes having the same external configuration and engines generally have the same basic weight and center of gravity limitations. However, the loading instructions necessary to load a particular airplane within these limitations will depend upon the equipment and other items included in the weight empty and the seating arrangement of that airplane. The proposal would permit the loading instructions to be placed in a separate document that is incorporated by reference in the Airplane Flight Manual. This should enable Airplane Flight Manuals to be prepared in a more convenient and useable form.

The proposal would transfer present § 25.1583(c)(3) to a new § 25.1583(i) because the maneuver load factor limitation is not appropriately placed under the subject of weight and loading distribution.

Ref. Proposal Nos. 334, 336; § 25.1583(c); Agenda Item H–59.

6–57. By revising § 25.1585 (a)(7) and (c) to read as follows:

§ 25.1585 Operating procedures.

(a) * * *

(7) Use of fuel jettisoning equipment, including any operating precautions relevant to the use of the system.

* * * * *

(c) The buffet onset envelopes determined under § 25.251 must be furnished. The buffet onset envelopes presented may reflect the center of gravity at which the airplane is normally loaded during cruise if corrections for the effect of different centers of gravity locations are furnished.

Explanation. The proposal for § 25.1585(a)(7) would replace a specific list of items that could affect fuel jettisoning with a general statement that covers any operating condition for which precautions should be taken during jettisoning.

The proposal for § 25.1585(c) would permit presenting in the Airplane Flight Manual the buffet boundary at the center of gravity most representative of operational loadings rather than the center of gravity at which the buffet boundary was determined during flight testing. If this procedure is used, the proposal would require that information be provided so that the pilot could apply a correction for the actual center of gravity.

Ref. Proposal Nos. 339, 340; §§ 25.1585(a)(7), 25.1585(c); Agenda Item H–61.

6–58. By adding a new § 25.1587 (c)(5) and (c)(6) to read as follows:

§ 25.1587 Performance information.

* * * * *

(c) * * *

(5) The vertical distance determined in accordance with § 25.121(e).

(6) The data determined in accordance with the requirements of § 25.123 must be presented in terms of net flight path as a function of time and distance with wind accountability.

Explanation. The proposal for paragraph (c)(5) would require the vertical distance determined in accordance with proposal § 25.121(e) be presented to the operator in the Airplane Flight Manual. Also see the proposal for § 25.121(e).

The proposal for paragraph (c)(6) is related to the proposal for § 25.123(a). Under present §§ 25.123(a) and 25.1587 (c), the airplane flight manual has not always contained the complete en route flight path performance data desired for operational use. The proposal for § 25.123 (a) would require that the variation in weight due to consumption of fuel and oil be included in the computation of the en route flight paths. This proposal for paragraph (c)(6) would require the en route net flight paths to be presented in terms of time and distance with wind accountability, for use in flight planning for terrain clearance and range with one or two engines inoperative.

Ref. Proposal Nos. 1029, 835; §§ 25.121 (e), 25.1587(c)(5); Agenda Items F–40, F–41.

PART 27—AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

§ 27.25 [Amended]

6–59. By deleting § 27.25(b)(1)(iii).

Explanation. See the proposal for § 23.25.

Ref. Proposal Nos. 61, 152; §§ 23.29(a)(3), 25.29(a)(3); Agenda Items A–1, E–30.

§ 27.29 [Amended]

6–60. By amending § 27.29 in a manner substantively identical to that proposed for § 23.29.

6–61. By deleting § 27.33(b)(3) and by adding a new § 27.33(e) to read as follows:

§ 27.33 Main rotor speed and pitch limits.

* * * * *

(e) *Main rotor low speed warning for helicopters.* For each single engine helicopter, and each multiengine helicopter that does not have an approved device that automatically increases power on the operating engines when one engine fails, there must be a main rotor low speed warning which meets the following requirements:

(1) The warning must be furnished to the pilot in all flight conditions, including power-on and power-off flight, when the speed of a main rotor approaches a value that can jeopardize safe flight.

(2) The warning may be furnished either through the inherent aerodynamic qualities of the helicopter or by a device.

(3) The warning must be clear and distinct under all conditions, and must be clearly distinguishable from all other warnings. A visual device that requires the attention of the crew within the cockpit is not acceptable by itself.

(4) If a warning device is used, the device must automatically deactivate and reset when the low speed condition is corrected. If the device has an audible warning, it must also be equipped with a means for the pilot to manually silence the audible warning before the low speed condition is corrected.

Explanation. Operating experience has indicated a need for a warning to the pilot when the main rotor of a helicopter is approaching an unsafe low rotational speed. The proposal would require the warning to be furnished either by the inherent aerodynamic qualities of the helicopter or by a warning device that is clearly distinguishable and would not require the attention of the crew within the cockpit. The warning would be activated until the low rotor speed condition is corrected or the audible device is shut off manually, and would reset itself automatically. Main rotor low speed warning would not be required on multiengine helicopters that have an approved automatic means to increase power on the operating engines when one engine fails, since this means would serve to maintain a safe main rotor speed.

Ref. Proposal Nos. 832A, 887; §§ 27.33, 29.33; Agenda Item I–62.

6–62. By revising § 27.45 including its heading to read as follows:

§ 27.45 General.

(a) Unless otherwise prescribed, the performance requirements of this subpart must be met for still air and a standard atmosphere.

(b) The performance must correspond to the engine power available under the particular ambient atmospheric conditions, the particular flight condition, and the relative humidity specified in paragraphs (d) or (e) of this section, as appropriate.

(c) The available power must correspond to engine power, not exceeding the approved power, less—

(1) Installation losses; and

(2) The power absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition.

(d) For reciprocating engine powered rotorcraft, the performance, as affected by engine power, must be based on a relative humidity of 80 percent in a standard atmosphere.

(e) For turbine engine powered rotorcraft the performance, as affected by engine power, must be based on a relative humidity of—

(1) 80 percent, at and below standard temperature; and

(2) 34 percent, at and above standard temperature plus 50 degrees F. Between these two temperatures, the relative humidity must vary linearly.

Explanation. See the proposal for § 23.45.

Ref. Proposal No. 588; § 23.45; Agenda Item B–3.

6–63. By changing the heading of § 27.65 and by revising § 27.65(b) to read as follows:

§ 27.65 Climb: all engines operating.

* * * * *

(b) Each helicopter must meet the following requirements:

(1) V_T must be determined—

(i) For standard sea level conditions;

(ii) At maximum weight; and

(iii) With maximum continuous power on each engine.

(2) If at any altitude within the range for which certification is requested, V_{NE} is less than V_T, the steady rate of climb must be determined—

(i) At the most favorable climb speed at or below V_{NE};

(ii) For the weights, temperatures, and altitudes for which certification is requested; and

(iii) With maximum continuous power on each engine.

Explanation. See proposal for § 29.65.

Ref. Proposal Nos. 878, 963; §§ 27.1505(a)(1), 29.1505(a)(1); Agenda Item L–70.

6–64. By revising § 27.67(c) to read as follows:

§ 27.67 Climb: one engine inoperative.

* * * * *

(c) Maximum continuous power on the other engines, and (for helicopters for which certification for the use of 30-minute power is requested), at 30-minute power.

Explanation. This proposal would include provisions in § 27.67(c) for establishing one-engine-inoperative performance for multiengine rotorcraft with the operating engines at the 30-minute power rating in addition to the performance with the operating engines at maximum continuous power. The proposal would make Part 27 similar to present Part 29 in this respect.

This proposal is related to proposals for §§ 27.923 and 27.927 (concerning rotor drive system tests) contained in Airworthiness Review Notice No. 3 (Notice 75–19).

Ref. Proposal No. 346; § 27.67(c); Agenda Item J–65 for Committee II; Agenda Item M–65 for Committee IV.

6–65. By revising § 27.75(a)(2)(ii) to read as follows:

§ 27.75 Landing.

(a) * * *

(2) * * *

(ii) For multiengine rotorcraft, one engine inoperative and with each operating engine within approved operating limitations; and

* * * * *

Explanation. The proposal is intended to clarify the current rule and to ensure consistency with § 29.75(a)(4)(ii).

Ref. Proposal No. 347; § 27.75; Agenda Item J–66.

6–66. By revising § 27.143(b) and adding a new § 27.143(e) to read as follows:

§ 27.143 Controllability and maneuverability.

* * * * *

(b) The margin of cyclic control must allow satisfactory roll and pitch control at V_{NE} with—

(1) Critical weight;

(2) Critical center of gravity;

(3) Critical rotor r.p.m.; and

(4) Power off (except for helicopters demonstrating compliance with paragraph (e) of this section) and power on.

* * * * *

(e) For helicopters for which a V_{NE} (power-off) is established under § 27.1505(c), compliance must be demonstrated with the following requirements with critical weight, critical center of gravity, and critical rotor r.p.m.:

(1) The helicopter must be safely slowed to V_{NE} (power-off), without exceptional pilot skill, after the last operating engine is made inoperative at power-on V_{NE}.

(2) At a speed of 1.1 times V_{NE} (power-off), the margin of cyclic control must allow satisfactory roll and pitch control with power-off.

Explanation. See the proposal for § 27.1505.

Ref. Proposal Nos. 349, 383, 836, 892; §§ 27.143, 29.143; Agenda Item K–68.

6–67. By revising § 27.175(c) to read as follows:

§ 27.175 Demonstration of static longitudinal stability.

* * * * *

(c) *Autorotation.* Static longitudinal stability must be shown in autorotation at airspeeds from 0.5 times the speed for minimum rate of descent to V_{NE}, or to 1.1 V_{NE} (power-off) if V_{NE} (power-off) is established under § 27.1505(c), and with—

(1) Critical weight;

(2) Critical center of gravity;

(3) Power off;

(4) The landing gear (i) retracted and (ii) extended; and

(5) The rotorcraft trimmed at appropriate speeds found necessary by the Administrator to demonstrate stability throughout the prescribed speed range.

* * * * *

Explanation. Current § 27.175(c) requires demonstration of static longitudinal stability in autorotation throughout the speed range for which certification is requested. The FAA believes that demonstration of static longitudinal stability at very low speeds in autorotation might not be very meaningful. The proposal would require that the lower speed limit for that demonstration be 0.5 times the speed for minimum rate of descent. In addition, the maximum speed for demonstration would be limited by V_{NE} or by 1.1 V_{NE} (power-off), if established, pursuant to the proposal for § 27.1505(c).

Ref. Proposal Nos. 174, 385; §§ 27.175, 29.175; Agenda Item K–69.

§ 27.1043 [Amended]

6–68. By amending § 27.1043(b) in a manner substantively identical to that proposed for § 23.1043(b).

6–69. By revising § 27.1501 to read as follows:

§ 27.1501 General.

(a) Each operating limitation specified in §§ 27.1503 through 27.1525 and other limitations and information necessary for safe operation must be established.

(b) The operating limitations and other information necessary for safe operation must be made available to the crewmembers as prescribed in §§ 27.1541 through 27.1589.

Explanation. See the proposal for § 25.1501.

Ref. Proposal Nos. 706, 877, 962; §§ 25.1501, 27.1501, 29.1501; Agenda Items H–58, L–73, L–74.

6–70. By revising § 27.1505(a) and adding a new § 27.1505(c) to read as follows:

§ 27.1505 Never-exceed speed.

(a) The never-exceed speed, V_{NE}, must be established so that it is—

(1) Not less than 40 knots (CAS); and

(2) Not more than the lesser of—

(i) 0.9 times the maximum forward speeds established under § 27.309; or

(ii) 0.9 times the maximum speed shown under §§ 27.251 and 27.629.

* * * * *

(c) For helicopters, a stabilized power-off V_{NE} denoted as V_{NE} (power-off) may be established at a speed less than V_{NE} established pursuant to paragraph (a) of this section; if the following conditions are met:

(1) V_{NE} (power-off) is not less than a speed midway between the power-on V_{NE} and the speed for maximum range in autorotation at maximum weight.

(2) V_{NE} (power-off) is—

(i) A constant airspeed;

(ii) A constant amount less than power-on V_{NE}; or

(iii) A constant airspeed for a portion of the altitude range for which certification is requested, and a constant amount less than power-on V_{NE} for the remainder of the altitude range.

Explanation. Present § 27.1505 requires that a never exceed speed, V_{NE}, be established for each rotorcraft, and permits V_{NE} to vary with altitude, rotor r.p.m., temperature, and weight; however, it does not provide for differentiation between power-off and power-off (autorotation) conditions.

The use of turbine engines and other design improvements has resulted in higher cruise and V_{NE} speeds for helicopters, and has also increased the difference between the maximum and minimum operating weights. For these helicopters an excessively steep dive would be required to demonstrate flight characteristics to a speed with the power-off that is as high as the V_{NE} with the power-on.

The proposal for § 27.1505(c) would therefore permit the applicant to establish a maximum airspeed for stabilized autorotation, designated by the term "V_{NE} (power-off)", and this speed can be less than V_{NE} with power-on if certain conditions are met. The term "V_{NE}" would apply to the power-on conditions for helicopters for which a V_{NE} (power-off) is established, and would apply to both the power-on and power-off conditions for helicopters for which a separate V_{NE} (power-off) is not established.

The V_{NE} (power-off) should be high enough to provide the pilot with an adequate range of speeds and glide angles during autorotation.

The proposal for § 27.1505(c) would, therefore, require that V_{NE} (power-off) be not less than a speed midway between the power-on V_{NE} and the speed for maximum range in autorotation at maximum weight.

To ensure ability to make a safe transition from power-on V_{NE} to V_{NE} (power-off) after failure of the last operating engine, the proposal for § 27.143(e) would require demonstration of the transition maneuver. To provide adequate control at V_{NE} (power-off), proposed § 27.143(e) would also require a margin of cyclic control at a speed of 1.1 times V_{NE} (power-off).

To avoid unintended increase in speed while the pilot's attention is required on other tasks, the proposal for § 27.175(c) would require longitudinal stability to be shown in autorotation at speeds up to 1.1 times V_{NE} (power-off).

See the proposal for § 29.65 for explanation of the proposed revision to § 27.1505(a)(1), which would require V_{NE} to be not less than 40 knots.

The proposal for § 27.1585 would require that the procedures for reducing speed from the power-on V_{NE} to V_{NE} (power-off) be included in the Rotorcraft Flight Manual.

Ref. Proposal Nos. 371, 409, 878, 879, 963, 964; §§ 27.1505, 29.1505; Agenda Items L–70, L–71.

6–71. By adding a new § 27.1521(f) to read as follows:

§ 27.1521 Powerplant limitations.

* * * * *

(f) *Ambient Temperature.* Ambient temperature limitations (including limitations for winterization installations, if applicable) must be established as the maximum ambient atmospheric temperature at which compliance with the cooling provisions of §§ 27.1041 through 27.1045 is shown.

Explanation. See the proposal for § 23.1521(e).

Ref. Proposal No. 714; § 23.1583(m); Agenda Item D–20.

§ 27.1527 [New]

6–72. By adding a new § 27.1527 that is substantively identical to proposed new § 29.1527.

6–73. By deleting § 27.1581(c) and marking it "[Reserved]"; and by revising § 27.1581 (a) and (b) to read as follows:

§ 27.1581 General.

(a) *Furnishing information.* A Rotorcraft Flight Manual must be furnished with each rotorcraft, and it must contain the following:

(1) Information required by §§ 27.1583 through 27.1589.

(2) Other information necessary for safe operation.

(b) *Approved information.* Each part of the manual listed in §§ 27.1583 through 27.1589, that is appropriate to the rotorcraft, must be furnished, verified and approved, and must be segregated, identified and clearly distinguished from each unapproved part of that manual.

* * * * *

Explanation. See the proposal for § 25.1581.

Also see the proposal for § 21.5 with respect to making Rotorcraft Flight Manuals available for helicopters.

Ref. Proposal No. 882; § 27.1581; Agenda Item L–74.

§ 27.1583 [Amended]

6–74. By amending § 27.1583(b) in a manner substantively identical to that proposed for § 23.1583(b), and by amending § 27.1583(g) in a manner substantively identical to that proposed for § 29.1583(h).

6–75. By adding a new § 27.1585(c) to read as follows:

§ 27.1585 Operating procedures.

* * * * *

(c) For helicopters for which a V_{NE} (power-off) is established under § 27.1505(c), information must be furnished to explain the V_{NE} (power-off) and the procedures for reducing airspeed to not more than the V_{NE} (power-off) following failure of all engines.

Explanation. See the proposal for § 27.1505.

Ref. Proposal Nos. 885, 972; §§ 27.1585, 29.1585; Agenda Item L–71.

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

§ 29.29 [Amended]

6–76. By amending § 29.29 in a manner substantively identical to that proposed for § 23.29.

§ 29.33 [Amended]

6–77. By deleting § 29.33(b)(3) and by adding a new § 29.33(e) that would be substantively identical to the proposed new § 27.33(e).

6–78. By amending § 29.45 as follows:

(1) By deleting paragraphs (a)(3) and (b)(3).

(2) By deleting the semicolon and the word "and" at the end of paragraph (b)(2) and by adding a period in place thereof.

(3) By adding the word "and" at the end of paragraph (b)(1).

(4) By adding new paragraphs (c), (d), and (e) to read as follows:

§ 29.45 General.

* * * * *

(c) The available power must correspond to engine power, not exceeding the approved power, less—

(1) Installation losses; and

(2) The power absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition.

(d) For reciprocating engine powered rotorcraft, the performance, as affected by engine power, must be based on a relative humidity of 80 percent in a standard atmosphere.

(e) For turbine engine powered rotorcraft, the performance, as affected by engine power, must be based on a relative humidity of—

(1) 80 percent, at and below standard temperature; and

(2) 34 percent, at and above standard temperature plus 50 degrees F.

Between these two temperatures, the relative humidity must vary linearly.

Explanation. See the proposal for § 23.45.

Ref. Proposal No. 588; § 23.45; Agenda Item B–3.

6–79. By changing the heading of § 29.65, by revising § 29.65(a) and by adding a new § 29.65(c) to read as follows:

§ 29.65 Climb: all engines operating.

(a) The steady rate of climb must be determined for each category B rotorcraft—

(1) With maximum continuous power on each engine;

(2) With the landing gear retracted;

(3) For the weights, altitudes, and temperatures for which certification is requested; and

(4) At V_T for standard sea level conditions at maximum weight and at the speeds selected by the applicant for other conditions.

* * * * *

(c) For helicopters, if V_{NE} at any altitude within the range for which certification is requested is less than V_T at sea level standard conditions, with maximum weight, and maximum continuous power, the steady rate of climb must be determined—

(1) At the most favorable climb speed at or below V_{NE};

(2) For weights, altitudes, and temperatures for which certification is requested;

(3) With maximum continuous power on each engine; and

(4) With the landing gear retracted.

Explanation. This is one of a series of proposals that would provide relief from current § 29.1505 which requires that the never exceed speed, V_{NE}, be established so that it is not less than the best rate of climb speed, V_T. This series includes proposals for §§ 29.65, 29.1505, 29.1527, 29.1583, 27.65, 27.1505, 27.1527, and 27.1583. Since V_{NE} usually decreases with altitude, the current rule may unnecessarily limit the permissible operating altitude of high performance helicopters. The proposals for §§ 29.65 and 27.65 would permit determining climb performance at the most favorable climb speed at or below the V_{NE} speed, at any altitude where the V_{NE} is less than the V_T speed established for standard sea level conditions. The FAA believes that constraints must be placed on the V_{NE} speed and operating altitudes to ensure that the helicopter will be operated well above the translational lift speed, in a speed range where the airspeed system is accurate, and within a safe range of altitudes. Those constraints are prescribed in the proposals for the following sections:

Proposed §§ 29.1505(a) and 27.1505(a) would require that V_{NE} be not less than 40 knots.

Proposed §§ 29.1527 and 27.1527 would require that a maximum altitude (operating limitation) be established as limited by flight, structural, powerplant, functional, or equipment characteristics. This is the same requirement in §§ 23.1527(b) and 25.1527.

Proposed §§ 29.1583 and 27.1583 would require that the maximum operating altitude established under §§ 29.1527 and 27.1527 be furnished as an operating limitation in the Rotorcraft Flight Manual.

Present §§ 29.1587 and 27.1587 would require that the steady rates of climb and the recommended climb speeds, at altitudes where the V_{NE} speed is equal to or less than the V_T speed determined under §§ 29.65 and 27.65, be furnished in the Rotorcraft Flight Manual.

Ref. Proposal Nos. 376, 878, 963; §§ 29.65(a), 27.1505(a)(1), 29.1505(a)(1); Agenda Items J–64, L–70.

§ 29.143 [Amended]

6–80. By amending § 29.143 in a manner substantively identical to that proposed for § 27.143.

§ 29.175 [Amended]

6–81. By amending § 29.175(c) in a manner substantively identical to that proposed for § 27.175(c).

§ 29.1043 [Amended]

6–82. By amending § 29.1043(b) in a manner substantively identical to that proposed for § 23.1043(b).

6–83. By revising § 29.1501 to read as follows:

§ 29.1501 General.

(a) Each operating limitation specified in §§ 29.1503 through 29.1525 and other limitations and information necessary for safe operation must be established.

(b) The operating limitations and other information necessary for safe operation must be made available to the crewmembers as prescribed in §§ 29.1541 through 29.1589.

Explanation. See the proposal for § 25.1501.

Ref. Proposal Nos. 706, 877, 962; §§ 25.1501, 27.1501, 29.1501; Agenda Items H–58, L–73, L–74.

§ 29.1505 [Amended]

6–84. By amending § 29.1505 in a manner substantively identical to that proposed for § 27.1505.

6–85. By revising § 29.1521(e) to read as follows:

§ 29.1521 Powerplant limitations.

* * * * *

(e) *Ambient temperature.* Ambient temperature limitations (including limitations for winterization installations if applicable) must be established as the maximum ambient atmospheric temperature at which compliance with the cooling provisions of §§ 29.1041 through 29.1049 is shown.

* * * * *

Explanation. See the proposal for § 23.1521(e).

Ref. Proposal No. 714; § 23.1583(m); Agenda Item D–20.

6–86. By adding a new § 29.1527 to read as follows:

§ 29.1527 Maximum operating altitude.

The maximum altitude to which operations is allowed, as limited by flight, structural, powerplant, functional, or equipment characteristics, must be established.

Explanation. See proposal for § 29.65.

Ref. Proposal Nos. 878, 963; §§ 27.1505(a)(1), 29.1505(a)(1); Agenda Item L–70.

6–87. By deleting § 29.1581(c) and marking it "[Reserved]", and by revising § 29.1581(a) and (b) to read as follows:

§ 29.1581 General.

(a) *Furnishing information.* A Rotorcraft Flight Manual must be furnished with each rotorcraft, and it must contain the following:

(1) Information required by §§ 29.1583 through 29.1589.

(2) Other information necessary for safe operation.

(b) *Approved information.* Each part of the manual listed in §§ 29.1583 through 29.1589 that is appropriate to the rotorcraft, must be furnished, verified and approved, and must be segregated, identified and clearly distinguished from each unapproved part of that manual.

* * * * *

Explanation. See the proposal for § 25.1581.

Ref. Proposal No. 827; § 25.1581(c); Agenda Item H–59.

6–88. By amending § 29.1583(b) in a manner substantively identical to that proposed for § 23.1583(b); and by adding a new § 29.1583(h) to read as follows:

§ 29.1583 Operating limitations.

* * * * *

(h) *Altitude.* The altitude established under § 29.1527 and an explanation of the limiting factors must be furnished.

Explanation. For an explanation of § 29.1583(h), see the proposal for § 29.65.

Ref. Proposal Nos. 878, 963; §§ 27.1505(a)(1), 29.1505(a)(1); Agenda Item L–70.

§ 29.1585 [Amended]

6–89. By amending § 29.1585 in a manner substantively identical to that proposed for § 27.1585.

PART 91—GENERAL OPERATING AND FLIGHT RULES

6–90. By revising § 91.31(b) and adding a new § 91.31(e) to read as follows:

§ 91.31 Civil aircraft operating limitations and marking requirements.

* * * * *

(b) No person may operate a U.S. registered civil aircraft—

(1) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual or the manual provided for in § 121.141(b); and

(2) For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

* * * * *

(e) The Airplane or Rotorcraft Flight Manual, or manual material, markings and placards required by paragraph (b) of this section must contain each operating limitation prescribed for that aircraft by the Administrator, including the following:

(1) Powerplant (e.g., r.p.m., manifold pressure, gas temperature, etc.).

(2) Airspeeds (e.g., normal operating speed, flaps extended speed, etc.).

(3) Aircraft weight, center of gravity, and weight distribution, including the composition of the useful load in those combinations and ranges intended to insure that the weight and center of gravity position will remain within approved limits (e.g., combinations and ranges of crew, oil, fuel, and baggage).

(4) Minimum flight crew.

(5) Kinds of operation.

(6) Maximum operating altitude.

(7) Maneuvering flight load factors.

(8) Rotor speed (for rotorcraft).

(9) Limiting height-speed envelope (for rotorcraft).

Explanation. The proposal for § 91.31(b)(1) is related to the proposal for § 21.5. See the proposal for § 21.5.

The proposals for § 91.31(b)(2) and (e) are substantively the same as present § 91.31(b), except that the word "approved" is inserted between "current" and "Airplane or Rotorcraft Flight Manual" to make it clear that these are FAA approved manuals, not other operating handbooks provided by manufacturers.

Ref. Proposal Nos. 582, 1008; §§ 21.183, 91.31; Agenda Items D–20, D–22.

6–91. By revising the heading and by adding a new paragraph (d) to § 91.37 to read as follows:

§ 91.37 Transport category civil airplane runway and weight limitations.

* * * * *

(d) No person may operate a turbine engine powered transport category landplane or amphibian on any runway other than a smooth, hard-surfaced runway unless—

(1) Limitations and performance information for such operations, including the particular type of surface, are set forth in the Airplane Flight Manual; and

(2) The operation is conducted in accordance with the approved limitations and performance information in the Airplane Flight Manual.

Explanation. The FAA is aware of a growing need for the use of transport category airplanes on unpaved runway surfaces. Airworthiness Review Notice Number 2 [Notice 75–10], contains proposals for §§ 25.105, 25.125, and 25.1533, and a proposed new § 25.241, which would establish certification standards for transport category airplanes intended to be used in operations on unpaved runways. Experience indicates that airplane acceleration and braking performance on unpaved runway surfaces, is affected by characteristics such as load bearing capability. Surfaces that are composed, in part, of loose stones or gravel pose a problem because such loose objects may cause structural damage by being deflected into the airplane structure. Similarly, turbine engine ingestion of loose, flying objects may also occur. Such ingestion can cause engine failure during the critical takeoff phase of flight.

For airplanes certificated under the new proposed standards for Part 25, appropriate operating limitations and information would be included in the Airplane Flight Manual. The FAA believes that a requirement is also necessary for turbine engine powered transport category airplanes that will not be required to comply with the new Part 25 amendment. Due to special considerations applicable to this kind of airplane, unpaved runways such as sod or gravel surfaces may have a critical effect on its operation.

This proposal would allow operation on a smooth, hard-surfaced runway, but for any other runway surface, the Airplane Flight Manual must contain limitations and performance information appropriate to the particular type of surface. The proposal would also emphasize that this operation must be conducted in accordance with such limitations and performance information.

Ref. Proposal No. 1013; § 91.37; Agenda Item E–28.

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

6–92. By revising § 121.141(b) to read as follows:

§ 121.141 Airplane or rotorcraft flight manual.

* * * * *

(b) In each transport category aircraft, the certificate holder shall carry either the manual required by § 121.133 if it contains the information required for the applicable flight manual and this information is clearly identified as flight manual requirements, or an approved airplane or rotorcraft flight manual. If the certificate holder elects to carry the manual required by § 121.133, he may revise the operating procedures sections and modify the presentation of performance data from the applicable flight manual if the revised operating procedures and modified performance data presentation are—

(1) Approved by the Administrator; and

(2) Clearly identified as airplane or rotorcraft flight manual requirements.

Explanation. Users of Aircraft Flight Manuals have indicated that the contents of the manuals are sometimes not presented in the most usable form for flight crews. This proposal would authorize the inclusion of approved revisions of the operating procedures and approved modifications of the performance data format in an operators manual required by § 121.133. This manual could be utilized by the flight crew instead of the flight manual. This proposal does not authorize any substantive change to the performance data but does authorize the modification of the presentation to be more usable by flight crews.

Ref. Proposal No. 1112; § 121.141(b); Agenda Item H–59.

APPENDIX I COMMITTEE II (FLIGHT) PROPOSALS DEFERRED

GROUP 1

Based upon the discussions at the Airworthiness Review Conference, the FAA has determined that the proposals listed below appear to have sufficient merit to warrant further consideration but for various reasons should be deferred for consideration at the next Airworthiness Review or Operations Review as appropriate. Included in the reasons for deferral are the following:

1. The proposal is so complex or extensive that more time is required than is available within the 1974–75 Airworthiness Review to give it full consideration.

2. More data is needed, to supplement or support the proposal, before a decision can be reached.

3. The proposal would be more appropriately considered during an operations review.

The deferral of these proposals does not foreclose the FAA from taking earlier separate rulemaking action on the deferred proposals if a need for such action should arise.

14 CFR (FAR)	Proposal No.	Agenda Item	Proponent
23.65	68	B-7	General Aviation Manufacturers Association.
23.67	69	B-8	Do.
23.77	70	B-10	Do.
23.177	77	C-14	Do.
23.221	59	C-18	M. C. Godbout.
Part 25	150	E-25	Department of Transportation—Australia.
25.105	155	F-36	Air Line Pilots Association.
25.107	1113	F-38	Aerospace Industries Association.
25.107	156	F-39	Do.
25.109	157	F-35	Department of Transportation—Australia.
25.123	162	F-41	Aerospace Industries Association.
25.125	163	F-43	Department of Transportation—Australia.
25.125	164	F-43	Do.
25.125	166	F-43	Aerospace Industries Association.
25.147	168	G-46	Do.
25.149	170	G-47	Air Line Pilots Association.
25.173	172	G-49	Aerospace Industries Association.
25.175	173	G-49	Do.
25.201	183	G-57	Air Line Pilots Association.
25.1583	335	H-60	Air Transport Association.
29.79	382	J-67	Aerospace Industries Association.
121.189	516	F-37	Air Line Pilots Association.
121.579	538	E-29	Do.

GROUP 2

The following proposals are being deferred to be dealt with in a later notice as a part of this Airworthiness Review Program:

14 CFR (FAR)	Proposal No.	Agenda Item	Proponent
25.21(g)	151	E-27	Air Line Pilots Association.
25.101(c)	154	F-32	Aerospace Industries Association.
25.253	1043	G-55	Federal Aviation Administration.
25.1563	336	H-60	Aerospace Industries Association.
27.79	348	J-67	Do.
29.75	390	J-66	Federal Aviation Administration.
29.1567	973	J-62	Do.

APPENDIX II COMMITTEE II (FLIGHT)
PROPOSALS WITHDRAWN BY PROPONENT

The proposals listed below were withdrawn by their proponents after the publication of the committee workbooks. The proponents or other interested persons may submit similar proposals in the future. The withdrawal of FAA proposals does not commit the FAA to any future course of action.

14 CFR (FAR)	Proposal No.	Agenda Item	Proponent
23.49	390	B-5	Federal Aviation Administration.
23.65	392	B-7	Do.
23.67	396	B-5	Do.
23.67	396	B-6	Do.
23.207	413	C-17	Do.
25.109	1027	F-34	Do.
25.125	165	F-36	Air Line Pilots Association.
25.147	1034	G-46	Federal Aviation Administration.
25.161	1036	G-48	Do.
25.183	1038	G-52	Do.
25.238	1044	G-55	Do.
25.255	1045	G-58	Do.
25.1307	788	E-24	Do.
25.1528	820	E-26	Do.
25.1581	1100	H-59	Federal Aviation Administration.
25.1583	829	H-60	Do.
25.1584	823	H-61	Do.
25.1585	1110	H-59	Do.
25.1585	1110	H-61	Do.
25.1585	833	H-61	Do.
25.1585	834	H-61	Do.
27.1509	372	L-72	Aerospace Industries Association.
29.51	888	J-68	Federal Aviation Administration.
29.67	378	J-65	Aerospace Industries Association.
29.1500	410	L-72	Do.
91.31	1111	H-59	Federal Aviation Administration.
121.193	517	F-41	Aerospace Industries Association.
121.198	518	F-42	Do.
121.195	519	F-36	Air Line Pilots Association.

APPENDIX III COMMITTEE II (FLIGHT)
PROPOSALS REMOVED FROM CONSIDERATION

Based on the FAA's review of the discussions at the Airworthiness Review Conference and of the information submitted by interested persons, the following proposals considered by Committee II at the Airworthiness Review Conference are removed from consideration during the First Biennial Airworthiness Review for the reasons listed below:

14 CFR (FAR)	Proposal No.	Agenda Item	Proponent
23.29	60	A-1	General Aviation Manufacturers Association.
23.49	64	B-4	The Dee Howard Co.
23.49	65	B-4	General Aviation Manufacturers Association.
23.49	66	B-4	Do.
23.145	73	C-11	Do.
23.45	74	C-11	Do.
23.171	76	C-13	Do.
23.181	78	C-15	Do.
23.207	79	C-17	Do.
23.729	91	A-2	Do.
23.1513	127	C-12	Do.
25.101	153	F-31	Air Line Pilots Association.
25.123	162A	F-41	Aerospace Industries Association.
25.149	169	G-47	Rijksluchtvaartdienst, Netherlands.
25.203	178	G-53	Aerospace Industries Association.
25.251	180	G-54	Do.
25.1581	830	H-59	Do.
29.75	281	J-66	Do.
29.143	384	K-68	Do.

Proposal No. 60. The proposal would have amended § 23.29 to include means other than weighing each airplane to determine the empty weight. Apparently the proponent, as indicated in the justification submitted, feels this change is necessary for other than type certification procedures. Since Part 23 establishes "standards for the issue of type certificates, and changes to those certificates," the FAA believes this amendment proposed for § 23.29 is not justified and is inappropriate for Part 23.

Proposal No. 64. The proposal would have amended § 23.49 and added a new § 23.50 to establish a separate regulation on stalling speed for airplanes with reversible pitch propellers. The FAA has determined that the proposal is not sufficiently definitive because it would not limit the amount of positive thrust used during the determination of stalling speed.

Proposal No. 65. The proposal would amend the definition of V_{S_0} and V_{S_1} in § 23.49 and would allow the stalling speeds to be determined on the basis of assumed elevator power capability that will provide an actual stalling speed. This would replace the minimum steady speed for those airplanes in which stalling speed is not obtainable. There was insufficient justification or evidence shown to assure that such a procedure as proposed would maintain operating speed margins necessary for an adequate level of flight safety.

Proposal No. 66. The proponent withdrew Part A of the proposal. Part B of the proposal would eliminate the 61 knot maximum V_{S_0} requirement for single engine and certain multiengine airplanes. The 61 knot limit was established because fatalities during forced landings increase rapidly for stalling speeds higher than 61 knots. The FAA believes that the reduced margin of safety is not justified.

Proposal No. 73. The proposal would amend the longitudinal control tests that now require power off to read—"Power required for a 3° descent." The FAA believes that there is in sufficient justification for this change which would result in a lower level of safety than that provided under the present regulation.

Proposal No. 74. The proponent suggested amending the current longitudinal control requirements. The FAA does not concur with the proposal for the following reasons:

1. Part A of the proposal would permit excessive control force if pilot actions were interrupted before retrimming can be accomplished. This could result in an unsafe condition.

2. Part B would eliminate a requirement which the FAA considers necessary and not adequately covered by the rest of the regulation.

3. Part C is objected to since "power off" flight during part or all of an approach is not uncommon and the test should be conducted at the most critical condition expected in service, not at a normal or average condition.

Proposal No. 76. The proposal would remove the term "control 'feel' (static stability)" from § 23.171 and insert in its place, "control force change." The FAA believes that the current wording is sufficiently clear and is not clarified by the terminology suggested.

Proposal No. 78. The proposal would have eliminated the term "heavily damped" in favor of "damped within two cycles." While the FAA believes that some advisory material may be necessary, the FAA does not believe that such material should be specified in the regulations.

Proposal No. 79. The proposal would have allowed installations of a warning system which need not function under an icing condition where the pilot knows of airframe ice accumulations and appropriate landing speed margin for airframe ice accumulations is presented by placard or in the Airplane Flight Manual. The FAA believes that the stall warning device should operate under all environmental conditions for which flight is approved.

Proposal No. 91. The proponent suggested that the landing gear warning requirement be amended to require the warning device to be activated when the wing flaps are extended "beyond the approach flap position" vice "to or beyond the approach flap position." Many landings made in Part 23 airplanes are made at wing flap settings less than the landing setting and at the recommended approach setting. The FAA believes that the present landing gear warning requirements are necessary to maintain an adequate level of flight safety.

Proposal No. 127. The proponent suggested that § 23.1513 be amended to allow the applicant to determine the operating limitation of V_{MC} in accordance with § 23.149 or that speed plus a margin selected by the applicant. The FAA believes that the pilot should

be informed of the actual V_{MC} as determined under § 23.49. However, it may be desirable for the Airplane Flight Manual to include a recommended higher speed for use in practicing one-engine-inoperative flight where V_{MC} is very close to stall speed.

Proposal No. 153. There was no proposal submitted, but only a request for discussion of reduced thrust takeoff procedures. A general policy discussion was held on the portions of this item which related to the Airworthiness Review.

Proposal No. 162A. The proponent suggested that the regulations be amended to allow the use of a contingency thrust engine rating in the determinations of two-engine-inoperative en route climb performance. Based upon Conference discussions, the FAA believes that the emergency thrust concept (see Proposal No. 154; § 25.101(c); Agenda Item F-32), which applies only to takeoff is a better approach for airplane turbine engines than contingency ratings. Therefore, the proposal is considered inappropriate for Part 25 airplanes.

Proposal No. 169. The proposal would have eliminated the dynamic demonstration of V_{MC}. The FAA has determined that there is a need for the dynamic demonstration and that sufficient justification is lacking to allow the reduction in the margin of flight safety which could occur with the elimination of the requirement.

Proposal No. 187. The proposal would allow reversal of stick force characteristics after reaching the stall. The FAA believes that this could result in an unwarranted degradation in flight safety.

Proposal No. 180. The proposal would permit continuous mild buffet in cruise. The current regulation protects crew and passengers from prolonged exposure to vibration. Also, pilots often use buffeting as a warning means. The FAA has determined that there is sufficient justification for the proposed change.

Proposal No. 330. The proposal would allow, at the option of the applicant, that the Airplane Flight Manual be crew oriented and not necessarily contain all of the presently required information. The FAA believes that regardless of who operates the aircraft, the Flight Manual that goes with the airplane should be complete with regard to all necessary information to operate the aircraft safely with due regard given to the usefulness of the information and the circumstances under which information is expected to be used.

Proposal No. 381. The proposal would eliminate the requirement that a safe landing must be possible after complete power failure for Category A rotorcraft. The FAA believes that this requirement is necessary to maintain an adequate level of flight safety for rotorcraft.

Proposal No. 384. See Proposal No. 381 for § 29.75.

Issued in Washington, D.C., on May 29, 1975.

J. A. FERRARESE,
Acting Director,
Flight Standards Service.

[FR Doc.75-14521 Filed 6-6-75;8:45 am]